THE RAILWAY GAZETTE
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DIESEL RAILWAY TRACTION SUPPLEMENT

The May issue of The Railway Gazette *Supplement, illustrating and describing developments in Diesel Railway Traction, is now ready, price* 1s.

GOODS FOR EXPORT

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as indicating that they are available for export

NOTICE TO SUBSCRIBERS

Consequent on paper rationing, new subscribers in Great Britain cannot be accepted until further notice. Any applications will be put on a waiting list, and will be dealt with in rotation in replacement of subscribers who do not renew their subscriptions. Orders for overseas destinations can now be accepted

POSTING "THE RAILWAY GAZETTE" OVERSEAS

We would remind our readers that there are many overseas countries to which it is not permissible for private individuals to send printed journals and newspapers. The Railway Gazette *possesses the necessary permit and facilities for such dispatch.*

We would emphasise that copies addressed to places in Great Britain should not be re-directed to places overseas

TO CALLERS AND TELEPHONERS

Until further notice our office hours are: Mondays to Fridays 9.30 a.m. till 5.30 p.m.

The office is closed on Saturdays

ANSWERS TO ENQUIRIES

By reason of staff shortage due to enlistment, we regret that it is no longer possible for us to answer enquiries involving research, or to supply dates when articles appeared in back numbers, either by telephone or by letter

ERRORS, PAPER, AND PRINTING

Owing to shortage of staff and altered printing arrangements due to the war, and less time available for proof reading, we ask our readers' indulgence for typographical and other errors they may observe from time to time, also for poorer paper and printing compared with pre-war standards

The Future of Home Railways

SINCE the Government made known the financial results of the controlled railway undertakings for last year—the figures were published in our April 13 issue—there has been some selling of home railway junior stocks, and prices have eased. No doubt recognition of the manner in which railway costs have risen was in part the cause of disquietude among certain holders of the stocks. As we pointed out in our April 20 issue, the fall of some £15,000,000 in net revenue, notwithstanding record total receipts of £394,360,000, might serve a useful purpose in that it lends weight to the warnings of the railway Chairmen at the annual meetings of the need for an early adjustment in railway charges, if the companies are to remain solvent after the war. In *The Financial News* it is suggested that the recent selling of home rail stocks probably was induced more by political fears than by any balanced view of traffics and earnings. Some investors, it is suggested, are anxious lest, with the return to party politics, corporately-owned transport might find itself in a kind of no man's land, raked by the fire of both sides. It is considered that investors would like to see the railways doing a little more effective persuasion, and that, in view of the imminence of the General Election, they should be wooing, not the Ministry of Transport, but British public opinion generally. Political opponents of the present railway ownership system are busily vociferous. How successfully the railways can use modern means of public education was shown by the pre-war square deal campaign. The idea is thrown out that from a tactical viewpoint it is time that both managements and stockholders combined their forces for a pre-election campaigning effort.

A Co-ordinated Post-War System

Recalling that the existing agreement provides that in effect railway charges will have to be adjusted upwards to cover increased costs, *The Financial News* points out that the problem resolves itself into what volume of traffic can the railways attract in a co-ordinated post-war traffic system at a given level of rates and fares, a given price level for fuel and materials, and a given railway wages level. The railways have a plan which has never been disclosed officially in detail, though its lines have been hinted at broadly, for example, at the last Great Western Railway meeting. Its base is a common rates structure founded on an equal incidence of fixed costs, within which the different branches of transport would compete in service. This, essentially, might become federative transport, which some would criticise as being too loose, and others as being too monopolistic. The ultimate problem, it is suggested, is precisely what form of federation ought to be adopted, or whether anything less than a unified constitution for transport will serve. *The Financial News* concludes that someone should give an authoritative lead on the problems facing the railways, and that this lead should come from the Government.

Accountants as Irish Transport Executives

From time to time there would seem to have been something amounting to fashions in the preliminary training of transport executive officers. Sometimes they have been drawn from the ranks of engineers, and sometimes lawyers have predominated. There have been relatively few locomotive engineers, although the late Sir John Aspinall, one-time General Manager of the Lancashire & Yorkshire Railway, was an outstanding exception to this generality. At the present time the chief executive officers of the four main-line British railways consist of one engineer, one traffic officer and two accountants. At the moment, indeed, accountancy seems to be in the ascendant. Certainly it is so in the case of the recently incorporated Irish Transport Company, for of five chief officers whose portraits and biographies we give elsewhere in this issue, four had their early training as accountants. The General Manager, Mr. E. C. Bredin, is the exception. He is a mechanical engineer, as was Mr. W. H. Morton, his predecessor as General Manager of the former Great Southern Railways (Eire).

Tourist Trades Value as an Export

The Hotels & Restaurants Association has issued a statement pointing out the need for consideration of hotels in post-war economy, and stressing the fact that the tourist trade, of which hotels are the backbone, brought to this country £31,311,000 in 1937. After the war, it is suggested, the foreign currency which hotels are capable of bringing through the tourist trade is capable of immense expansion, and a figure of £100,000,000 a year is put forward as an authoritative estimate. Now that the recovery and increase of our export trade is so imperative, it is pointed out that any means of acquiring foreign exchange is of paramount importance. The hotel industry by attracting tourists, already brings to this country a large revenue, and this is just as vital as the export of manufactured goods, or shipping and insurance services. It

is urged, therefore, that hotels should be regarded for income tax purposes as a productive industry, because they are an important factor in the balance of trade. In the House of Commons on April 27, the Chancellor of the Exchequer said he was prepared to consider whether structural work connected with the installation of equipment could qualify for relief as part of the cost of installing the equipment. In one way or another the equipment of hotels was eligible for tax relief, and he was prepared to consider also its installation.

Further Rise in Coal Prices

The further advance in the price of coal, this time by 3s. 6d. a ton, announced by the Minister of Fuel & Power last week, cannot fail to have serious repercussions throughout industry. The average increase over all coal supplies is now estimated at 18s. a ton since the beginning of the war, to which must be added the latest advance. Coupled with the shortage of supplies and the lack of choice of varieties of coal, from which the railways are not the least sufferers—their present consumption is about 15,000,000 tons a year—the position of the coal industry is a grim commentary on the lack of success which has attended operational control by the Government. The higher price of fuel will be reflected in every stage of manufacture and transport. The making of a ton of steel requires the use of two tons of coal, so that a manufacturer's rising costs will start from the construction of his buildings and the making of his plant. The effect will be cumulative, too, for a ton of cement used in building takes 8 cwt. of coal. The Minister of Fuel & Power said that by far the greatest single cause of the increased price of coal was the rise in miners' wages. As in the last war, increased pay has been accompanied by a decline in output. This is the basic problem of the coal industry, which will have to be faced sooner or later.

The Cost of Industrial Accidents

A recent reply to a question in the House of Commons put the estimated cost of Workmen's Compensation at £17½ million a year, and an estimate has been made in both Great Britain and America that the visible cost of accidents as shown in compensation payments is approximately only one-fifth of the total loss to the community. When Mr. Ernest Bevin addressed a conference on works safety in London recently, he said that if one took into account the hidden costs of loss of production, loss of time or other employees, damage to machinery and plant, loss of material, and so forth, the estimate grew to a total cost of something approaching £70 million a year. The non-fatal accidents in factories, from a wartime peak of over 313,000 in 1942, fell to approximately 280,000 last year; the fatal accidents from a high level of 1,646 in 1941 had declined to 1,000 in 1944. This fall has been due to many causes, but among them has been the work of the Royal Society for the Prevention of Accidents, which in 1940 Mr. Bevin united with the accumulated experience of the Factory Department. Mr. Bevin said he was convinced that the large proportion of accidents that was not caused by moving machinery (now 83 per cent. of the total) could be controlled chiefly from within the factory. Tidiness was always the sign of a good workman, and tidy workmen did not have accidents.

Grand Union Canal Company

The undertaking of the Grand Union Canal Company—other than the Regent's Canal Dock—came under the control of the Minister of War Transport as from July 1, 1942, under the provisions of the Canal Control Order (S.R. & O., 1942, No. 1327). At the same date a subsidiary undertaking (the Grand Union Canal Carrying Co. Ltd.) also came under Government control. The parent company also possesses nine other subsidiary companies, four of which were formed towards the close of the year 1943, or early in 1944, and these have not yet begun trading. For another company no accounts are yet available, and for the remaining four companies their accounts terminating on December 31, 1944, show in the aggregate a net profit (profits less losses). Of these latter four companies one is subject to Government control. In the opinion of the directors these nine subsidiary companies are at least worth the £141,597 at which they stand in the balance sheet. The report of the parent company for the year 1944 is the first which has been available for publication since the beginning of the war. It shows that the tonnage receipts for the year amounted to £148,002, against £162,925 in the previous year. Gross receipts were £333,247 and working expenses £235,239. Sums of £24,917 and £35,000 are appropriated respectively to renewals reserve and general reserve and after payment of the full 6 per cent. dividend on the preference stock, the balance to be carried forward is £32,742. The mileage of canal is about 280 from London (Limehouse) to Birmingham, with branches to Leicester, Brentford, Slough, Alyesbury, Northampton, Market Harborough, etc.

Pre-Heating Passenger Rolling Stock

Rolling stock, whether for rail or road transport service, is apt to strike cold to the passengers on the first journey in the morning, especially if it has been stored in the open air in frosty conditions. In temperate climates this is seldom more than a matter of discomfort, but in the extreme weather conditions experienced in Alaska it became necessary for the problem to be tackled, and a portable heater was developed to pre-heat aircraft at Alaskan air bases. This heater, which is called a Janitrol, is now being used in the U.S.A. to give a quick boost in temperature to buses that have been standing overnight in open yards, as has become an increasing practice. According to the manufacturer of the unit, the interior of a cold bus can be warmed to a point which is pleasant and comfortable for passengers on the first run, during the interval of five minutes before the first trip is taken. Petrol, kerosene, or light oils, as well as diesel oil, can be used as fuel for the portable unit, which has an output sufficient to warm four average sized homes. Its heat rise of 230 degrees enables it to deliver positive heat in sub-zero temperatures. The idea is capable of wide adaptation to all forms of passenger rolling stock, as the heat is delivered very simply through trunks from the portable unit. It would appear that the deciding factor in temperate climates may well be the number of days in a year on which its use would be justified.

The Guildford Railway Centenary

To-morrow (May 5) is the centenary of opening of the first railway to Guildford, and the Southern Railway is marking the occasion by holding a centenary exhibition at Guildford House, High Street, Guildford, from May 5 to May 19. It is interesting to recall that Guildford is the only station on the Southern Railway which, before grouping, was served by regular passenger services of all three of the constituents, namely, the London & South Western, the London, Brighton & South Coast, and the South Eastern & Chatham. Guildford was first approached by a branch from the old London & Southampton Railway at Woking, and it is this 6-mile section which was opened 100 years ago. It was promoted as a separate undertaking by the Guildford Junction Railway Company, which received its incorporation and its powers on May 10, 1844. The original intention was to adopt William Prosser's patent system of wooden rails, with flangeless-wheeled locomotives and rolling stock kept on the line by angular guide wheels grooved to contact the top and side of the rectangular rail. Experimental sections were laid at Vauxhall and on Wimbledon Common, but, before the Guildford line was built, the L.S.W.R. had agreed to purchase it, and conventional track was laid. Prosser was compensated with £20,000.

Steel and Its Competitors

Modern research is having important and far-reaching results in making possible the use, for certain purposes, of what hitherto have been regarded as inferior substitutes for other and more expensive materials. In the iron and steel realm such substitutions are becoming increasingly frequent. For example, improved technique in the production of malleable iron has made it practicable to substitute malleable-iron castings for many uses for which cast steel previously was thought to be essential. In a similar way, high-duty cast irons, with physical properties which in earlier days would have been thought barely credible, are now often adequate to replace malleable iron. As a result of widely-expanded war production, the position of rolled and forged steel also is threatened in various of its uses, by aluminium and magnesium, and, of non-metallic substances, by plywood, plastics, and glass. However, steel has considerable advantages over these competitors, such as its greater tensile strength and other superior physical properties; also, it is less affected by high temperatures, and, generally, costs less to produce. Nevertheless this prospective invasion of the steel market will make it necessary for steel manufacturers to pay close and unceasing attention to the requirements of their customers. In both this country and the United States, large extensions of steelworks plant and improvements in technique are being planned so that post-war steel production may keep fully abreast of the times.

Railways and Mail Transport

The extensive development of air transport that is certain after the war, together with the use that has been made of the air for transporting mail matter to and from the Forces during the war, might suggest further transfer of the carriage of mails from trains to aeroplanes in the post-war era. In the United States, however, where air mail transport might appear to have

considerably more attractive possibilities than in the more limited confines of Great Britain, such air competition is regarded with no great apprehension. The principal objection to carriage of mails by aeroplanes is that of uncertainty. To date, the best record achieved by any American air line company with air mails, over a full year, has been 89·29 per cent., leaving over 10 per cent. of the journeys uncompleted, for weather and other reasons. Such a record falls considerably short of the needs of an efficient postal service, and bears no comparison with the dependability of transport by rail. In addition, the advantage of rail transport is that, by means of the automatic postal exchange apparatus, it is possible to pick up and deposit mails at frequent intervals along any main line of railway, while at the same time running the mail trains at reasonably high speeds by reason of the absence of intermediate stops, save at the more important junctions; whereas mail carried by aeroplanes must be brought over considerable distances to airfields by road transport, and distributed in the same way. Air transport is at its best where the distances are great, and particularly where water barriers have to be overcome.

■■■▬

Improving the Steam Locomotive

A remarkable move has been made recently in the United States towards improving the efficiency of the steam locomotive. Six railways serving the coal-producing areas of the Eastern States—the Baltimore & Ohio, Chesapeake & Ohio, New York Central, Norfolk & Western, Louisville & Nashville, and Pennsylvania—have combined with three major coal-producing companies to subscribe over $1,000,000 to undertake research in the subject, which will be handled by a company known as Bituminous Coal Research, Inc. The Massachusetts Institute of Technology and Purdue University are also interested in the matter. Preliminary information concerning this project makes it clear that the research is intended to supplement what has been done lately by various railways and locomotive-building firms towards the improvement of the steam locomotive, rather than to duplicate any research which is now proceeding. It is held that the latest advance in science and engineering may make it possible to initiate some revolutionary changes in steam locomotive design, and that, in view of the fact that coal is produced in 27 States, and is estimated to form a very high proportion of the fuel resources of the country, the continued growth and future stability of American railways depend largely on the increased use to which this cheap and abundant fuel can be put.

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From 4-6-4 to 4-8-4 on the New York Central

The decision of the New York Central System to introduce extensively the 4-8-4 locomotive wheel arrangement (as mentioned in our Overseas columns) is important. Hitherto this company, with its associated lines, has concentrated on the 4-6-4 type for express passenger work, and the name " Hudson " usually applied to this wheel arrangement is derived from the Hudson River, which the New York-Chicago main line of the N.Y.C.S. skirts for 142 miles between New York and Albany. Despite the tight timing of the principal services, such as the peacetime 16-hr. schedule of the " Twentieth Century Limited " over the 958 miles between New York and Chicago with loads of 800 to 1,000 tons, the adhesion obtained with six-coupled wheels hitherto has been found adequate, on this company's generally level track. The N.Y.C.S. has decided, however, to come into line with many other American companies by adopting eight-coupled wheels for high-speed work. Speeds up to and slightly exceeding 100 m.p.h. have been recorded with modern American 4-8-4 locomotives, so that the additional coupled axle appears to have no hampering influence.

Locomotive Builders' Talks with British Railways

MR. WALTER WOODBINE PARISH'S address to shareholders of the Vulcan Foundry Limited, at the annual meeting last week, covered a wide range of matters of considerable importance to the railway manufacturing industry as a whole. Of particular interest, certainly, was his statement that a meeting had taken place recently between representatives of the British locomotive building industry and the General Managers of the four main-line railways, as a result of which he said it is known that the railways are to seek capacity from the industry to build over a period of five years a limited number of locomotives. These are regarded as arrears which the railways have been unable to manufacture in their own workshops during the war, but the actual placing of the orders will, we assume, be dependent upon satisfactory terms being arranged. At this meeting the representatives of the private locomotive builders took the opportunity to press the British railways to place a proportion of their future requirements with the industry, so as to allow for a regular number of locomotives to be delivered annually. They also urged the General Managers to bear in mind that it was regularity in output which was the essence of low productive costs and that this would afford a real assistance to the industry in its competition for export work.

In view of the emphasis which is being placed by the Government on the need to bring about a large increase in exports, Mr. Parish said, he hoped that the future policy of the British railways would be closely allied with the old-established locomotive industry, which had demonstrated fully during the years of the war that its existence in fighting fettle was of national importance. He was fully convinced that co-operation was an essential of success under post-war conditions. This co-operation fell under various heads. Within the industry it was represented by the Locomotive Manufacturers' Association of Great Britain, working for the mutual benefit both of the industry itself and the purchaser. Co-operation with the railways also was necessary, with a view to ensuring the maximum mutual benefit that could be achieved in that way. It was also necessary that there should be full co-operation with Government departments, with which it was essential for the Locomotive Manufacturers' Association to maintain the closest possible touch .

Developments resulting from the talks between the railways and the private builders will be followed with the closest interest. For many years the British locomotive building industry has urged the necessity for a substantial and regular share of locomotive buildings for the home railways. It has been pointed out that in competition for export trade, the industry suffers a disadvantage compared with overseas builders, practically all of whom are assured of a substantial home market. The home railways, which are not permitted by their statutes to engage in export business, and which since 1875 have been restrained from building for one another, have frequently claimed that their building costs are less than those of private builders. They have large shops constantly engaged on repair and maintenance work, and which represent a very large aggregate capital investment. New locomotive building is but a small part of the volume of work passing through these shops, which are predominantly repair depots.

The numbers of locomotives built by the railway companies and those bought by the companies from private builders for ten years before the outbreak of war, are shown in the table at the foot of this page. In that table similar figures for carriages and

Year	Locomotives			Passenger carriages			Merchandise and mineral vehicles		
	In company's shops	By contractors	Total	In company's shops	By contractors	Total	In company's shops	By contractors	Total
1929	412	129	541	1,101	118	1,219	20,815	1,623	22,438
1930	321	183	504	1,240	61	1,301	18,514	1,317	19,831
1931	293	85	378	919	33	852	9,396	2	9,398
1932	263	6	269	968	—	968	6,766	4	6,770
1933	219	1	220	866	40	906	5,914	425	6,339
1934	288	103	391	1,335	144	1,479	12,910	2,075	14,985
1935	371	195	566	1,400	308	1,708	17,489	3,861	21,350
1936	336	245	581	1,430	551	1,981	20,048	6,991	27,039
1937	289	277	566	1,169	165	1,334	18,112	10,614	28,726
1938	316	—	316	1,080	36	1,116	17,718	4,478	22,196
Total	3,108	1,224	4,332	11,508	1,456	12,964	147,682	31,390	179,072

wagons are also given, for although Mr. Parish made no reference to these vehicles, which fall outside the scope of his company, it is reasonable to assume that in view of the statements made by the Chairmen of the main-line railway companies at the recent annual meetings as to the arrears of maintenance and the need for replacements, consideration will also be given by the railway companies to placing orders with the carriage and wagon building firms during the first five years after the cessation of hostilities to assist them in overtaking arrears of maintenance. A report of Mr. Parish's speech is given elsewhere in this issue.

C.T.C. Suggested for Scotland

THE reports in our overseas columns of the continued extension of centralised traffic control on the American railways, sometimes covering noteworthy mileages, lead to the question being raised from time to time of the possibility of applying anything of the kind to main lines in this country. Whenever this occurs the suitability of some Scottish routes is almost certain to be mentioned. There is a good deal of single line in Scotland, as in America, some sections of which at least carry important traffic, with considerable seasonal variations, and the general operating conditions are often such as to enable a centralised direction to function to advantage. On page 446 we publish an article by a correspondent who has taken particular interest in this matter and who offers some practical suggestions for applying C.T.C. to the former West Highland and Highland Railway routes which will no doubt be read with interest, by operating and signalling officers alike. As we stated in a footnote to a letter in our correspondence columns last week, one thing has to be borne in mind in considering any such changes in our established methods of operation, and that is that the safety conditions covered by our block telegraph regulations must be provided for in the altered working, whatever other advantages—and they might be considerable—the latter may offer. American practice is not influenced by this consideration, as such manual block working as exists is much simpler than ours, but it will have to be given due weight in Great Britain.

It is to be hoped that no difficulty will be found in modifying the American system so as to provide adequate safeguards and permit of an experiment being made on a sufficiently large scale. In view of the high costs of labour and materials which are likely after the war, lines like the West Highland and Highland may be run at a loss when traffic reverts to its normal peacetime level. Any scheme calculated to reduce working expenses therefore will be worth a thorough examination. The alternative to a radical simplification of working methods on lines carrying a lean traffic may be the abandonment of a considerable mileage of railway in sparsely-populated areas.

Relief Trains

WITH the holiday season closely approaching, the Ministry of War Transport has announced that, in connection with the introduction of the summer timetable on May 7, if passengers cannot be dealt with by the booked services, the railway companies have discretion to make a moderate increase in the services by running additional relief trains, provided that their running does not interfere with the movement of essential traffic. The exercise of this discretion is also obviously dependent on the companies being able to find sufficient rolling stock and train crews. We understand, however, that the railway companies have been instructed not to advertise these relief trains. This, we are convinced, will cause unnecessary inconvenience to the public, and prevent the companies from making the best operating arrangements for dealing with the traffic.

Taking the question of inconvenience to the public first; in the absence of any indication as to when, or indeed whether any, relief trains will be run, passengers desiring to travel long distances naturally will try to reach the main-line termini well in advance of the departure times of the booked trains to endeavour to secure a seat. If last summer's experience is any criterion, this means that passengers will commence arriving several hours before their trains are due to leave, a procedure which naturally results in considerable congestion in the stations and their approaches, hinders the normal work of the platform staff, and puts the passengers to all the inconvenience of a lengthy stand in queues, frequently embarrassed by luggage and children. For operating reasons, the principal long-distance trains have been arranged in closely-spaced groups, so that line occupation by passenger services may be reduced to a minimum. If the crowds at the station in the morning necessitate several reliefs being run to long-distance trains, delay is likely to arise in obtaining the necessary platform accommodation, and the bunching of the trains causes difficulties *en route*, especially at the important intermediate junctions. In these circumstances the delays so caused may react on connectional services all over the system.

The more sensible plan from the point of view of convenience to the public and railway operating would be to spread the additional trains as evenly as possible over the timetable to fill in some of the existing gaps. During the past two or three war-time summers, the Great Western Railway has followed this plan to great advantage on Saturdays during the height of the summer season, and has advertised in its timetables special holiday trains to West of England resorts, several of them making lengthy non-stop runs, at times well separated from those of the all-the-year-round trains. The London & North Eastern Railway has been gradually spreading out its departures, so that a group of trains which earlier in the war left Kings Cross between 9.30 and 10.10 a.m. inclusive, now ranges from 8.55 to 10.30 a.m., and leaves room for such additional trains as may be required.

Whether it would be better to run an existing train in two or three closely-spaced portions, or spread the additional trains throughout the day is a matter for determination by the appropriate railway-operating officers, but, in any case, there can be no question that removal of the Ministerial ban on the prior advertisement of such extra trains would facilitate the work of the companies and be a great convenience to the public, particularly as apparently it is intended that only a limited number of relief trains should be run.

Changing Distribution of Incomes

IN our Scrap Heap page we reproduce from a Government White Paper,* issued at the time of the Budget, a table showing the number of individuals in different ranges of net income assessed for tax in 1938-39 and 1942-43. This table shows clearly the change in the distribution of income brought about by changes in taxation, by classifying individuals by ranges of income after tax. In 1938-39, when the standard rate of income tax was 5s. 6d. in the £, some 7,000,000 persons were assessed to tax. In the fiscal year 1942-43, when the standard rate had risen to 10s. and allowances and exemptions had been reduced considerably, the number of tax payers brought within the scope of the Chancellor of the Exchequer had risen to 13,000,000. In view of the great widening of the sweep of the income tax net, that result is not surprising.

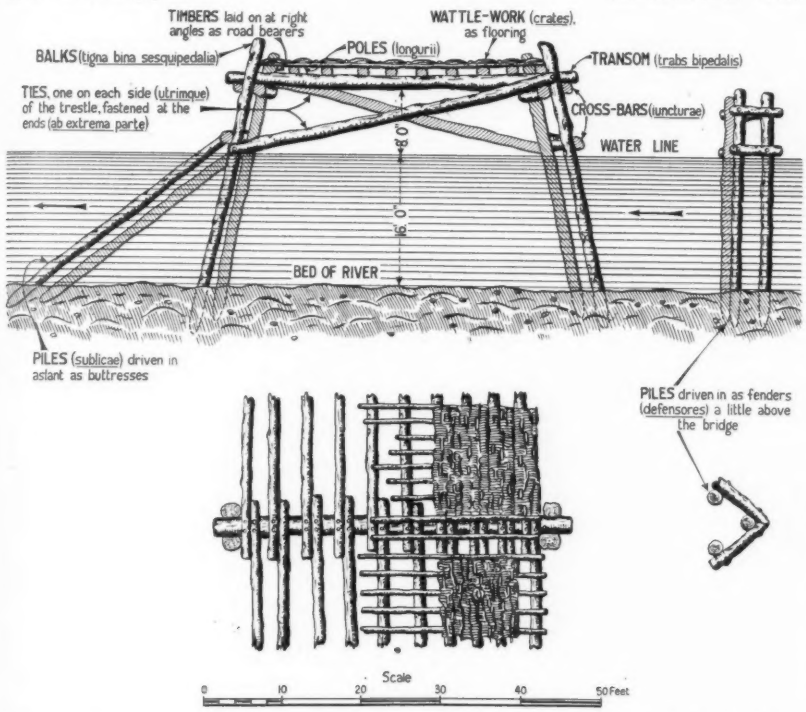
It was accompanied, however, by very great changes in the various categories of incomes. In the various ranges of income left to the taxpayer after the deduction of tax, there was a very large increase below the £1,000 a year mark, and a very sharp decline above that figure. Indeed, whereas in 1938-39 there were 6,770,000 persons whose income after tax was between £150 and £1,000 a year, in 1942-43 the number practically had doubled to 12,850,000. Those with net incomes after tax of betwen £150-£250, had risen from 4,500,000 to 7,000,000, those with from £250-500 from 1,820,000 to 5,300,000 and those from £500-£1,000 a year from 450,000 to 550,000. In the figures up to £500 a year net income, no doubt, is reflected largely the increasing employment of women in industry, and the large-scale employment at increased rates of pay resulting from the war. In any event it is clear from the figures given in the White Paper that many more persons in the lower income groups had a greater net income after taxation than had been the case in the year before the war.

In the case of those with an income after tax of more than £1,000, the position was reversed, with increasing severity as the net income rose. Thus, whereas in 1938-39 there were 230,000 persons with net incomes in excess of £1,000, in 1942-43 there were but 151,000. Of these in the earlier year 155,000 were in the £1,000-£2,000 net income category; these had shrunk to 117,000 in 1942-43. Between £2,000 and £4,000, the drop was from 56,000 to 31,750. Those with between £4,000 and £6,000 left after the payment of tax declined from 12,000 in 1938-39 to 1,170 in 1942-43. Finally, the numbers of those with £6,000 or more left after the payment of taxes on income, from being 7,000 in the earlier year, had fallen to no more than 80 in 1942-43. No more striking example, perhaps, could be given of the penal level to which taxation has risen, or to the need to reduce a burden, which in the Chancellor's own words, is becoming "unquestionably oppressive to the spirit and enterprise of industry."

* Cmd. 6623. H.M. Stationery Office. 1s.

Bridging the Rhine in 55 B.C.

AN interesting parallel between circumstances of the present year, and those of precisely 2,000 years ago, is provided by the successful efforts of a World Power to bridge the Rhine in "a campaign against the German barbarians." The bridging methods adopted by Julius Cæsar, moreover, are not without their interest to modern bridge engineers who have played so vital a part in the present war. Our information, concerning this pioneer Rhine bridge is derived exclusively from Book IV of Cæsar's own work *De Bello Gallico* (the Gallic War), written in the third person. The following notes are based upon the English translation by H. J. Edwards (the Loeb Classical Library), compared with the translation of W. A. Macdevitt, and our drawing is an attempted reconstruction of the bridging method described. In the spring of the year 55 B.C., after the finish of his campaign against the Germans west of the Rhine, Cæsar decided for many reasons that he must cross the river. The most cogent reason was that, as he saw that the Germans were so easily induced to enter Gaul, he wished to make them fearful in turn for their own security, by showing them that a Roman army could and would cross the Rhine. He deemed it unsafe, and also unworthy of his own dignity and that of the Roman people, to cross in boats. Therefore, although he was confronted with the greatest difficulty in making a bridge, by reason of the breadth, the rapidity, and the depth of the river, he decided to make the effort, and proceeded to build a bridge on the following plan.


TIMBERS laid on at right angles as road bearers
WATTLE-WORK (crates) as flooring
BALKS (tigna bina sesquipedalia)
POLES (longurii)
TRANSOM (trabs bipedalis)
TIES, one on each side (utrimque) of the trestle, fastened at the ends (ab extrema parte)
CROSS-BARS (iuncturae)
WATER LINE
80'
0'
BED OF RIVER
PILES (sublicae) driven in astant as buttresses
PILES driven in as fenders (defensores) a little above the bridge
Scale
0 10 20 30 40 50 Feet

He caused pairs of baulks 1 ft. 6 in. thick, sharpened a little way from the base and proportioned in length to the depth of the river, to be coupled at an interval of 2 ft. These he lowered into the river from rafts, and drove in with rammers; not, like piles, perpendicularly, but leaning forward at a uniform slope, so that they inclined in the direction of the stream. Opposite these were planted two baulks coupled in the same fashion, at a distance of 40 ft. from base to base, slanted against the force of the current. These pairs of baulks had 2-ft. transoms let into them at the top, filling the interval at which they were coupled, and were kept apart by a pair of braces on the outer side at each end. As they were held apart and also clamped together, the stability of the structure was great, and its form of construction was such that, as the force and thrust of the water increased, the baulks were held together more tightly. These trestles (sets of baulks and transoms) were interconnected by timber laid over at right angles, and floored with long poles and wattlework (hurdles). In addition, piles were driven into the water obliquely on the side facing down stream, thrust out below like a buttress and close joined with the whole structure, so as to take the force of the stream. There were other buttresses a little distance above the bridge, so that if trunks and trees, or vessels, were launched by the natives to break down the structure, these fenders might lessen the force of such shocks, and prevent damage to the bridge.

The whole work was completed in ten days from that on which the collection of the timber began, and the army was taken across. Leaving a strong post at each end of the bridge, Cæsar pressed on into the territory of the Sugambri. Deputies from several States came to him with requests for peace and friendship, and to these he replied in generous fashion, and ordered hostages to be brought to him. Historians are not unanimous in their view about the precise location of this bridge, which is not indicated by Cæsar, but it seems probable that Cæsar's bridge was built slightly to the north of the point where the River Mosel enters the Rhine.

From Ichthyologist to Booking Clerk

THE employment by the railway companies during the war of over 123,500 women in more than 320 different types of work has created many new problems for railway staff officials, although some of the difficulties which have arisen have had their humorous side. Most of these women have entered the railway service for the duration of hostilities only, but they have proved extremely versatile and are doing practically every kind of railway work, with the exception of driving and firing engines. They are acting as goods porters, stablemen, signalmen, guards, horse and motor drivers, fitters, welders, turners, electricians, crane drivers, blacksmiths, ticket collectors, ship's pursers, and gas fitters, and have made a most valuable contribution to the wartime activities of the railways.

This army of women has been drawn from every section of the community; housewives, tailoresses, shop girls, umbrella makers, hairdressers, waitresses, typists and mineral water bottlers. The manner in which they have mastered their railway work is particularly creditable having regard to their pre-war occupations, of which the following are some of the most unusual. A booking clerk now employed by the London Transport was previously an ichthyologist who cleaned out aquaria at Buckingham Palace and many other stately homes, fed fish, crocodiles and snakes and tended them when sick. A gas fitter employed by the L.M.S.R. was formerly a cow puncher on the Mexican prairies, and one of London Transport's policewomen was training to be an operatic singer before the war. What greater contrast in life could one have than that of a bus conductress stationed at Victoria Garage who before joining London Transport was a "wall of death" motor cycle rider, or that of a former egg packer who now operates a 5-ton steam hammer at the Southern Railway Ashford Works!

The Southern Railway can also boast of a proficient wagon painter who used to be a revue star dancer, and one of the L.M.S.R. female motor-tyre inspectors was at one time a rubber planter in Malaya. The G.W.R. has a passenger guard who was formerly cook housekeeper to a Lieutenant-Governor of Windsor Castle and it also employs a French woman who once kept a thriving café at Dunkirk and a ticket collector who was previously a hairdresser. It might be considered unusual for a woman to drive a 50-ton overhead crane in a L.N.E.R. locomotive shop, but it is even more remarkable to know that she drove an overhead crane in the last war 28 years ago, has five children and is now a great grandmother. Yet another grandmother works on the L.N.E.R. at Leeds with her daughter, who is a chargehand, and her granddaughter, who is a porter.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

War Bonus on Railway Pensions

Middlesex. April 24

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—The letter in your issue of March 16 by "One About to Retire" revealed a new approach to the question of pensions generally and many thanks are due to you and the contributor.

Many men for over 25 years have been making voluntary contributions to a supplementary fund for the benefit of those who retired during and since the last war and are still doing so. It is understood some companies agreed to contribute a like amount.

There is one phase of this question which, I think, deserves the light of publicity, as it denies to many retiring men their full pension to which they are rightly entitled. The reorganisation of departments since 1923 has caused many men to be moved from place to place, but particularly from the provinces to London where the cost of living for a family man is not less than £70 a year more. By way of compensation some companies make an allowance of £10 or £20 a year, leaving the recipient with a loss of at least £50 a year.

Some companies will not allow this allowance to be assessed for pension fund contribution, as it is looked on as being expenses and therefore not eligible. The paradox therefore arises, if it is expenses why do the companies return it for income tax assessment as if it were salary; if it is salary it should contribute to the pension fund in accordance with the rules.

There are many men who have spent, or will spend, a quarter of their career in London, but who will retire on a pension reckoned on their old provincial salary, in addition to a loss of £500 or more on the cost of living alone.

One can well imagine two men of equal status working together in London, both having the same total salary, but the one coming from the provinces pays pension fund contribution on his old salary whereas the Londoner pays on the whole and gets a larger pension in consequence.

Yours faithfully,

JAMES HADSUM

Locomotive Cast-Steel Bar Frames

London, S.W.1. April 20

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I am glad that my ground bait in your issue of February 23 has interested so big a fish as your correspondent of March 30, and my only regret is that no further remarks have been made on this subject.

It is certainly a surprise to me to hear that steel foundries in this country are prepared to cast frames when required. From 1930 onwards numerous orders for locomotives were put out to open tender by the Chinese Ministry of Railways, and in all of these, except in repeat orders, cast frames were specified. American and Continental builders accepted the specifications without question, but British firms all refused to tender for cast frames and offered slab frames as an alternative. By doing so they thus departed from the specifications and prejudiced their chances of securing the orders. As all and not only some tendering firms refused, the inference was obvious, apart from information given in private correspondence.

To assist British builders in their apparent dilemma, and as a check on a tendency to inflate prices, I succeeded, after considerable opposition, in having the specification amended to include slab frames as an alternative. Your correspondent infers that the reason for this action on the part of the British builders was not that frames could not be cast, but that slab frames were considered superior. That is arguable, but does not alter the fact that they were not specified. If slab frames are superior, an intensive propoganda campaign on their behalf is needed to make purchasers specify them rather than the cast frames which are used on the majority of the world's locomotives.

Your correspondent remarks that cast frames are seldom asked for in this country. I suggest that the reason for that is that overseas locomotive men have always regarded them as unobtainable here. Once let it be generally known that British firms willingly will supply cast frames, guaranteed up to American standard, at the same price as, or cheaper than, plate or slab frames, and the result might well be surprising.

Your correspondent asks me to state why I prefer cast to slab frames. My answer is:—

1. I prefer them because there is less fitting work in them. Brake hanger brackets and many other items can be cast in place on cast frames, but must be individually fitted on slab frames. Any reduction in the number of parts which can work loose is a blessing.

2. American practice is now drawing the world like a magnet. The U.S. railways have tried slab frames over about 10 years, but cast frames are still specified on 99 per cent. of new locomotives when cast-steel beds are not required. This is presumably done for a good and sufficient reason. Overseas locomotive men have not infrequently corresponded with American railwaymen on this very subject. This may be one reason why Australia pioneers the casting of frames rather than the use of locally rolled slabs.

3. The prime factor is economic. America has firms which specialise in frame casting and do so with a minimum of wastage.

Agreeing that slab frames make a sound job, one doubts whether, by the time they are rolled, set, torch-cut, fully machined, and have had their details fitted, they can be as cheap as a pair of large and tricky but comparatively simple castings.

As to cast-steel beds, it is notable that the N.S.W. Railways preferred to import beds rather than use local slabs. We have all suffered from loose cylinders, and anything that reduces the rising cost of maintenance is a sound investment. But I doubt whether present wage scales will permit of cast-steel beds on medium-sized locomotives paying a dividend on the extra capital invested. But they also are certainly coming, and Great Britain must be prepared to supply them for big engines built for overseas railways.

To try to clear the matter, may I summarise:—

1. If cast-steel frames are included in specifications, will British builders now supply them?

2. If not, is this due to the inability to obtain them at comparable prices?

3. If so, can steel firms say why, once experience is obtained, such an apparent discrepancy between British and American prices should exist?

To avoid red herrings, I might add that American frame castings are seldom perfect, but are satisfactory in service, and that cast frames are more brittle in derailments, but can safely be welded.

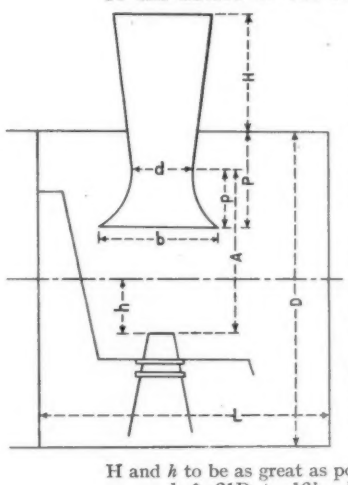
Yours faithfully,

KENNETH CANTLIE

The Locomotive Front End

P.O. Box 7, Escombe,
Natal, S. Africa. March 10

TO THE EDITOR OF THE RAILWAY GAZETTE



SIR,—Mr. D.W. Sanford's paper, read before the Institute of Locomotive Engineers, is a welcome contribution to the still incompletely solved problem of the front end. His method, I think, is new and may well be usefully combined with earlier calculations.

The now almost historical experiments of Professor W. F. M. Goss in the locomotive testing laboratory of Purdue University are still largely a guide for front-end proportions. Referring to the accompanying diagram, Professor Goss's recommendations were as under (I take these from his book "Locomotive Performance"):

H and *h* to be as great as possible.

$d = \cdot21D + \cdot16h$ $\quad b = 2d$ or $\cdot5D$

$P = \cdot32D$ $\quad p = \cdot22D$

Taper of chimney 2 in. diam. per ft. of length.

Some years ago, the results of a great many front-end experiments, conducted by a leading railway, were reduced to some empirical formulæ which were read in a paper at the time and of which I have kept a note. They were:

h to be as low as practicable.

H and K are factors.

$$H = \frac{\text{(Heading surface in sq. ft.)} \times \text{(Volume of cylinder in cub. in.)}}{1{,}000{,}000}$$

$$K = \frac{H}{T} \quad (T = \text{dia. of blastpipe orifice})$$

$d = \cdot42H + 8\cdot15$ or $2\cdot6K + 7.28$ (whichever is the greater)

$b = 2d$ $\quad p = d$

$$A = \frac{d}{T} \times 11\cdot4 \text{ (average taper of chimney 1 in 9)}$$

It may be of interest to compare, for any particular engine, the results obtained from these two sets of formulæ with Mr. Sanford's method in which the steaming capacity of the boiler and the velocity of the gases are factors.

Yours faithfully,

G. V. O. BULKELEY

The Scrap Heap

The hotel in Rome known as the Albergo Massimo d'Azeglio, taken over by the Canadian Officers' Club, has been re-named the Chateau Laurier, after the famous Canadian National Railways hotel in Ottawa.

* * *

In the Smoker

There is a real need for more non-smoking compartments on our railways. On my route from Waterloo the compartments provided are always full. I am a smoker, but I feel that a small and usually crowded railway compartment is not the place to light up. And I know that a lot of smokers think on the same lines.—*From a letter in "The Star."*

* * *

Fewer Rich

The rise in wartime earnings and the effect of war taxation on high incomes are brought out strikingly in the Budget White Paper. The following table shows the number of individuals in different ranges of net income after tax assessed in 1938-39 and 1942-43 :—

Range of income after tax £	Number of individuals 1938-39	1942-43
150-250	4,500,000	7,000,000
250-500	1,820,000	5,300,000
500-1,000 ...	450,000	550,000
1,000-2,000 ...	155,000	117,000
2,000-4,000 ...	56,000	31,750
4,000-6,000 ...	12,000	1,170
6,000 and over ...	7,000	80

(*See editorial article, page* 440)

* * *

Nationalisation

It would be well that people should realise that nationalisation of the land, mines, railways, and any other industries would not mean that these things would belong to the community. They would belong to the State, and under a Socialist Government the State would consist of a number of dictatorial autocrats, whose rule would be despotic. Society would be composed of two groups—the "Upper Ten" (officials), who would have perfect freedom and privileges, which every individual would crave, while the sheep (non-officials) would only be able to do as they were told. —*From a letter by Mr. W. Rose in "The Daily Sketch."*

Another Chateau Laurier

Three business men had had an expensive dinner at the Savoy. One of them said, "I am a supertax payer, and I can put this down to costs, so let me pay the bill as it will cost me only a few shillings." The second man said, "Let me pay it, because I can put it down to expenses, as I pay excess profits tax, so that it will cost me nothing at all." The third man said, "You must let me pay because I am on a cost-plus basis, and I can make money out of it."—*Mr. A. C. M. Spearman, Conservative Member for Scarborough & Whitby in the House of Commons during the Budget debate.*

* * *

100 YEARS AGO

[*From* The Railway Times, *May* 3, 1845]

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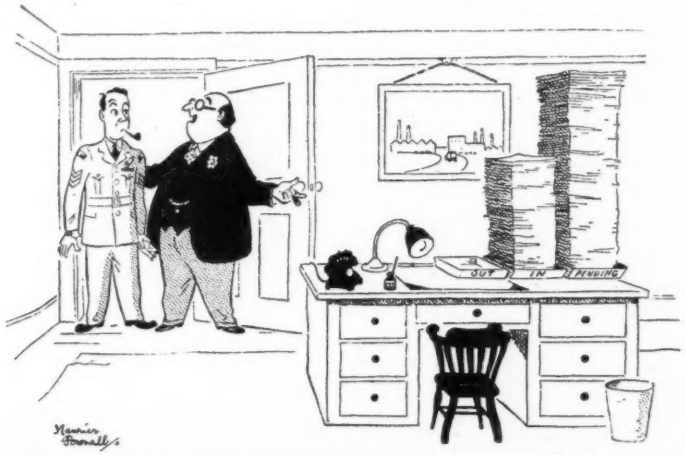
25th April, 1845.



"As you see, Peabody, your old job is still waiting for you"

[*Reproduced by permission of the proprietors of "Punch"*]

To commemorate the one hundredth anniversary of the introduction of postal vans on the French railways, the Vichy French postal administration last

August issued a special 1½-franc stamp showing an outside view of the first postal van put into service in 1844, a four-wheeler with elaborate decorations on the sides and corners as well as with a decorative frieze on both sides of the roof. The inscription on the strip below the window sills shows the wording: "Administration des postes." A specimen of the stamp is reproduced.

* * *

In 1835 Robert Stephenson & Company delivered to the Belgian State Railways the three locomotives used at the opening of the first Belgian railway, from Brussels to Mechlin, on May 6 of that year. Eventually Mechlin (or Malines) became the centre of the Belgian railway industry and the location of its largest railway repair shops. One of the Stephenson engines became a museum piece, and stood proudly in a special clearing in the yards. As such it survived the first World War. It was still there, standing beside a wooden model of a similar locomotive, when the Germans swept through the Lowlands in the summer of 1940. They left it alone, and it was still there in April, 1944, when the Royal Air Force opened its pre-invasion blitz on Continental transport. Its standpoint, hemmed in by some 90 modern locomotives, in various stages of repair, was very vulnerable. On the evening of April 19 of last year the R.A.F. visited Malines and dropped high-explosive bombs into the works area. The boiler repair shops, machine-tool shops, and coach building depot were devastated, and the entire works area was reduced to ruins in just over an hour. When Belgian employees picked their way over the ruins to the spot where the museum piece had stood, they surveyed it ruefully. The chimney was still standing, but the boiler door had been wrenched open by the force of many explosions, and the firebox was like an upended pepper-pot. Perhaps the remains may yet be salved and preserved, when the task of priority repairs slackens.

* * *

Tailpiece

(*The need to conserve materials does not lessen*)

The spring is in the air, the glad
Victorious spring that makes men mad,
And maddens till they scarce refrain
From needless journeying by train.
The fields suspend their winter nap.
Over the windmill fling your cap,
But do not fling
Away that precious paper or that string.

In cuttings where the bright rails run
The grasses revel in the sun,
And on the grass Dame Nature showers
A tangel of uncounted flowers.
Dame Nature, she who loves a show,
Is prodigal—be you not so,
Nor quite forget
The need for salvage is not ended yet.

E. C.

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

SOUTH AFRICA

Harbours and Shipping

It was announced recently in the Senate by the Minister of Transport, Mr. Sturrock, that the Railways & Harbours Administration intended to build four 10,000-ton ships to replace the three freighters now owned. It was also intended to build special ships with light draught and refrigerated space for coastal trade with Union ports and up to the east and west coasts of Africa. During the war the Union had developed well-equipped harbours with full facilities for repairs and it was important that this equipment should be kept in use.

South African Airways

The Minister also announced that through the generosity of the British Government, South African Airways had been able to charter, on very generous terms, sufficient Avro Yorks for the start of the Johannesburg-London service. The present intention was to run the Commonwealth services with Tudor planes. If it was decided to use Tudors, he would buy them ; they were machines which could be used for seven years or more.

UNITED STATES

New Lines

The construction of several lines has been authorised recently. Of these, the longest is to be a 29½-mile spur from the main line of the Florida East Coast Railway at Fort Pierce, Florida, to milepost 152½ on the Okeechobee branch, estimated to cost $1,150,000. This will give direct access to the only revenue-producing portion of the branch, and will enable the remaining 136 miles, from milepost 152½ to Maytown, to be closed.

Loudspeakers for Breakdown Trains

The Central Railroad of New Jersey has been experimenting with the use of loudspeakers on breakdown or "wrecking" trains. To overcome the difficulty of reliance on a code of whistles and hand-signals for the direction of crane movements, a public-address system has been installed which amplifies and directs the voice of the "wreck master" to the crane operator and to the point at which breakdown operations are in progress. The man in charge is provided with a microphone at the end of a 150-ft. cord, and his voice is amplified by a horn-type 15-watt loudspeaker mounted on the boom of the crane, which is supplemented by a second and smaller loudspeaker in the craneman's cab. At the base of the boom a 20-watt amplifier is installed ; power is supplied by a 32-volt d.c. turbo-generator set, the current of which is transformed for use to 110 volts, 60 cycles. The crane operator also can speak into the address system by depressing a button which puts his own microphone into service, and cuts out the loudspeaker in his cab. Reference to a somewhat similar development on the Philadelphia & Reading Railroad was made in *The Railway Gazette* of September 1, 1944.

4-8-4 Locomotives for N.Y.C.S.

The New York Central System, which for some time has had on order with the American Locomotive Company, at the latter's Schenectady Works, its first 4-8-4 locomotive for passenger service, has increased the order to one for 26 locomotives of the same wheel arrangement. As explained in an editorial note in this issue, this represents a departure from tradition, as the 4-6-4 arrangement of wheels has long been standard on this railway and its associated lines, the Michigan Central, Boston & Albany, and Cleveland, Cincinnati, Chicago & St. Louis.

The additional 25 4-8-4s will be generally similar to the first one ordered, except that the trailing bogie is to be modified to accommodate a larger ashpan. Very large tenders are to be provided, with accommodation for 41 tons (of 2,240 lb.) of coal ; the aim, no doubt, is to avoid the necessity for refuelling *en route* on the long continuous runs now undertaken. The water capacity will be 18,000 gal. It is specified that the rating of these engines shall be not less than 6,000 b.h.p. apiece. The 4-8-4s will be known as the "Niagara" class.

The first of the new 4-8-4s was handed over to the railway company at Schenectady on March 10, in the presence of Mr. Gustav Metzman, President of the New York Central System, Mr. Duncan Fraser, President of the American Locomotive Company, and also of Mr. Thomas E. Dewey, Governor of New York State. The new locomotive has 25-in. × 32-in. cylinders, 6-ft. 3-in. driving wheels, 275 lb. pressure, and a tractive effort of 62,500 lb. Adhesion weight is 123 tons, and weight of engine and tender in working order, with tender two-thirds loaded, is 361 tons. In the later engines of the series experiments are to be tried with 6-ft. 7-in. driving wheels in conjunction with 290 lb. pressure, which will leave the tractive effort unaffected, but should give a higher speed capacity.

CANADA

C.P.R. Record Freight Movement

The Canadian Pacific Railway achieved a new record for movement of revenue freight traffic over its Eastern Canadian lines when 393,226 revenue freight wagons were moved in the 28 days of February last. This figure is the highest for the first 28 days of any month, winter or summer, in C.P.R. history. The record day was February 24, when 15,404 loaded freight vehicles were handled. Mr. D. C. Coleman, Chairman & President of the company, points out that this movement was effected in spite of the worst weather conditions encountered in many years ; and comments that actually during the month, although Dominion statistics report shortages of transport for export grain because of box wagons being snowed up in sidings, the C.P.R. moved 3,500,000 bushels of grain to ships at Saint John, N.B., or 1,100,000 bushels more than in February, 1944. During the record period of 28 days C.P.R. snowploughs travelled 55,776 miles. To haul the record load the locomotives burned 225,000 tons of coal, and travelled over 3,058,000 miles.

Apart from the record number of revenue loads hauled, the C.P.R. moved in the same month 9,300 wagon loads, mainly of coal for locomotives, and 125,000 empty wagons to loading points.

"This gratifying record," states Mr. Coleman, "is due in part to improvements which the company has succeeded in making in facilities and rolling stock during the past couple of years. But these, useful as they are, could not have established such a record without the experienced and skilful tactics of Eastern lines management constantly supported by the faithful efforts of the entire organisation." Among the improvements referred to by Mr. Coleman are the provision of block signalling ; new locomotives, including diesel-electric shunters ; and mechanical ash-handling plants at strategic points.

PERU

New Main Line to Matarani

The Southern Railways of Peru are constructing a new main line to connect La Joya, on their existing main line, with the greatly-improved port of Matarani on the Pacific coast, a distance of 40 miles. This will enable the present main line from La Joya to Mollendo to be abandoned, and the secondary port of Mollendo will probably be served by a branch line from Matarani, from which it is nine miles southwards down the coast.

In 1941 the improved harbour installations at Matarani were completed. They include two breakwaters, one 2,122 ft. and the other 492 ft. in length, with a 460-ft. channel between their heads. Within their shelter there is a 1,476-ft. quay at which vessels drawing up to 36 ft. of water can berth ; this quay is served by four warehouses, each 280 ft. long and 88 ft. wide, built in cement and asbestos with steel frame and is of fireproof construction. All facilities such as customs, baggage, and waiting accommodation are provided.

The first 12 miles of the new line from La Joya to Quebrado Guerrero are believed to be just completed, and the whole 40-mile line should be open by the end of this year.

CEYLON

Prevention of Pilfering

New regulations have been introduced in Ceylon covering the delivery of Government goods. The regulations ensure that any damage or loss to goods whilst being transported by train shall be traced quickly to the source. Forwarding agents and others authorised to remove the goods despatched by train from Colombo to a station in the provinces are requested not to take delivery of any parcels showing signs of their having been tampered with. The matter must be reported immediately to the consignee, who has instructions to have packages opened in the presence of a railway officer and himself or a Staff Officer or other responsible officer nominated by him.

This procedure has been introduced in view of the losses that have been incurred in transit.

Ticket Restriction

The inconvenience to which regular railway passengers were subjected when the issue of tickets was restricted, because of a pilgrim or holiday rush, has been overcome to some extent. It has been decided that for passengers to suburban stations the restrictions need not be observed. So far as passengers by long distance mail trains are concerned, station masters have been allowed discretion to issue tickets in excess of the quota in exceptional cases where they are satisfied that the enforcement of the restriction would cause real hardship.

SWITZERLAND

Rhaetian Railway 1945 Budget

The 1945 budget of the Rhaetian Railway is expected to show total railway receipts amounting to fr. 16,000,000, including fr. 15,300,000 for traffic receipts and fr. 600,000 in respect of ancillary receipts. Expenditure for wages, salaries and materials is estimated at fr. 12,100,000. On this basis the profit and loss account is expected to close with a credit balance of fr. 1,700.

True Gauge in Straight Track

Permissible amount of slack gauge in straight track in relation to the lateral oscillation or nosing of locomotives

By R. A. Inglis

NOSING action of locomotives is caused by the horizontal couple or moment of the unbalanced portion of the reciprocating parts (piston-heads and rods, crossheads, and part of the connecting rods). The effect of this unbalanced horizontal couple in producing lateral oscillation is resisted by the moment of inertia of the engine about its vertical axis. With long and heavy engines, and at ordinary speeds, the effect may be negligible.

Let $m = W/g$ be the mass in pounds of the unbalanced portion of the reciprocating parts per cylinder.

Let v be the piston velocity or the velocity of this mass at any point of the stroke.

Let d be the distance in feet between the cylinder centre lines.

Let s be the stroke, or the distance in feet which the centre of gravity of the mass m traverses at each piston stroke, and F the horizontal force developed by the mass m, causing nosing.

Then $Fs = \frac{1}{2}\frac{W}{g}v^2$, or $F = \frac{1}{2}\frac{W v^2}{gs}$ lb.

and the horizontal couple

$= Fd = \frac{1}{2}\frac{W}{g}v^2\frac{d}{s}$ ft. lb

g denoting the acceleration due to gravity in ft./sec.^{2}

Let P be the pressure of the front coupled wheel flange on the rail on one side, and of the back coupled wheel flange on the rail on the other side due to the couple Fd, and let b denote the length of fixed wheel

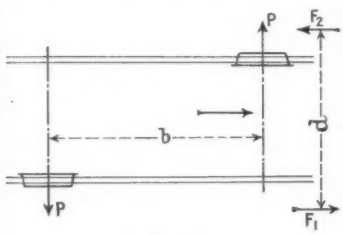


Fig. 1

base of the locomotive (see Fig. 1) Then, neglecting the moment of inertia of the locomotive for maximum effect,

$Pb = Fd$, or $P = \frac{1}{2}\frac{W v^2 d}{g s b}$ lb.

The pressure P therefore, as is evident, varies directly as the weight of the unbalanced portion of the reciprocating parts, the square of the velocity, and the cylinder

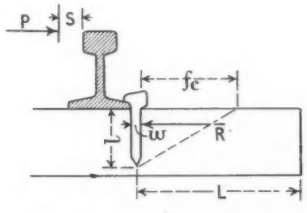


Fig. 2

spacing, and inversely as the piston stroke and fixed wheel base ; and can be calculated for any given locomotive of known characteristics and speed. For a two-cylinder locomotive, with cranks at right angles, which is the prevailing type, the pressure P will occur once a revolution on each rail alternately.

Slack gauge implies yielding of fastenings. Assume that the blow P occurs over a sleeper, and is resisted by one outer spike w square, embedded l in the sleeper, and that the maximum safe compressive stress on the wood at the back of the spike is f_c lb./in.^{2} neglecting any shear or frictional resistance at the sides of the spike (see Fig. 2).

Assume also that the whole of the force P is transmitted by the rail flange to the dogspike. Then the work done in compressing the fibres of the sleeper at the back of the spike is equal to PS.

Total pressure on wood at back of spike = R.

$R_{max} = \frac{f_c\, l\, w}{2}$, $R_{min} = 0$.

If L denotes the length of sleeper at back of spike, in inches, then the compression at the surface of the sleeper will be given by $\frac{f_c L}{E}$, and assuming the spike will turn about its point, the compression at the point is zero.

Therefore, the average compression is $\frac{f_c L}{2E}$ and the work done in compressing the fibres this amount is $\frac{f_c^2\, l\, w L}{8E} = P S$.

Calculation of v

v can be calculated for any given speed, diameter of driving wheels, and length of cylinder stroke.

For example, let the speed be 45 miles/hr., *i.e.*, 66 ft./sec. or 72 km./hr.

Let diameter of driving wheel be 68 in.

Let cylinder stroke be 26 in.

$R.p.s. = \frac{66 \times 12}{68 \times \pi} = 3{\cdot}71.$

The two forces F_1 and F_2 will be equal and opposite when the two cranks are at 45° with the horizontal.

Let V denote the linear velocity of the crank pin, assumed constant, and let v now denote the piston velocity when the cranks are at 45° with the horizontal.

Then $V = 3{\cdot}71 \times \frac{26}{12} \times \pi = 25{\cdot}2$ ft./sec.

and neglecting the obliquity of the connecting rod, $v = V \sin 45° = 17{\cdot}9$ ft./sec.

Calculation of w

For sake of example :

Assume weight of reciprocating parts at 3 lb. per sq. in. of piston, and diameter of piston is 20 in.

Then weight of reciprocating parts is $3 \times \frac{\pi}{4} \times 20^2$, and if two thirds of this is balanced, the weight of the unbalanced portion is $\frac{\pi}{4} \times 20^2 = 315$ lb.

Assume $d = 7$ ft. 7½ in., $s = 2{\cdot}166$ ft., $b = 14{\cdot}5$ ft.

Then $P = \frac{1}{2} \times \frac{315}{32{\cdot}2} \times \frac{17{\cdot}9^2 \times 7{\cdot}625}{2{\cdot}166 \times 14{\cdot}5}$

$= 382$ lb.

Note : When one piston is at mid stroke, the corresponding crank will be vertical and the velocity of its pin will be 25·2 ft./sec., but the other piston will be at the end of the stroke, and the velocity of the other crank pin will be zero.

F_1 will equal $F \times \frac{25{\cdot}2^2}{17{\cdot}9^2}$, and $F_2 = 0$.

$d = 7{\cdot}625$ in this case, therefore

$P = 382 \times \frac{25{\cdot}2^2}{17{\cdot}9^2} \times \frac{1}{2} = 378$ lb. or a little less than the value of P when the cranks are at 45° with the horizontal.

$S = \frac{f_c^2\, l\, w\, L}{8\, E\, P}$

Take the breaking stress for quebracho colorado in direct compression at 875 kg./cm., and one fifth of this as the value of $f_c = 175$ kg./cm. or 2,480 lb./in.

$E = 1{,}608{,}000$ lb./in., $l = 4$ in., $w = \frac{7}{8}$ in., $L = 0m{\cdot}40$, say 16 in.

Then $S = \frac{2480^2 \times 4 \times 7 \times 16}{8 \times 1{,}608{,}000 \times 8 \times 382}$

$= 0{\cdot}07$ in., say 2 mm.

This is the maximum amount of slack gauge which should be allowed for the given conditions, which may be taken as average.

S for any one locomotive and type of track will vary inversely as the square of the speed. Thus for any speed V km./hr., the amount of slack gauge permissible will be

$2 \times \frac{72^2}{V^2}$ mm.

Naturally, using two outer dogspikes, or chaired track, the amount of permissible slack gauge would be doubled or more ; but the writer hopes that this remark will not be taken as a justification of slack gauge. On the contrary, the very small amount permissible as calculated above simply emphasises the importance of laying and maintaining track true to gauge, with secure fastenings, so that any tendency of the locomotive to lateral oscillation will be nullified by the rail fastenings.

An additional argument in favour of true gauge is that the modern practice is to balance a good deal less than two thirds, perhaps only 40 per cent. of the reciprocating weight. In this case S would be reduced to a still more insignificant amount.

DAVID BROWN & SONS (HUDDERSFIELD) LIMITED, AND COVENTRY GEAR CUTTING COMPANY.—It is announced that David Brown & Sons (Huddersfield) Limited has taken over the Coventry Gear Cutting Company.

LICENCES FOR HIGH-SPEED STEEL.—The Minister of Supply has made the Control of Iron & Steel (No. 41) Order, 1945, which came into force on April 23. Under this Order, high-speed steel, for which a licence from the Iron & Steel Control hitherto has been required, may be obtained by departmental authorisation (M. form). The Order also frees iron powder from control. Copies (S.R. & O. 1945, No. 408) may be obtained from H.M. Stationery Office, York House, Kingsway, W.C.2, or through any bookseller, price 1d.

THE WAR WORK OF IMPERIAL CHEMICAL INDUSTRIES LIMITED.—A book is to be prepared by Mr. Sidney Rogerson on the contribution to the national war effort of Imperial Chemical Industries Limited. The book will be produced primarily for employees and shareholders of the company and will describe the magnitude and variety of I.C.I.'s contribution to British industry and agriculture and to the allied victory. Many new matters will be dealt with, including the cartridges for self-heating soup cans, the famous P.I.A.T. weapon, the products known as Gammexane, Methoxone, Ardil, polythene, Mepacrine and so forth.

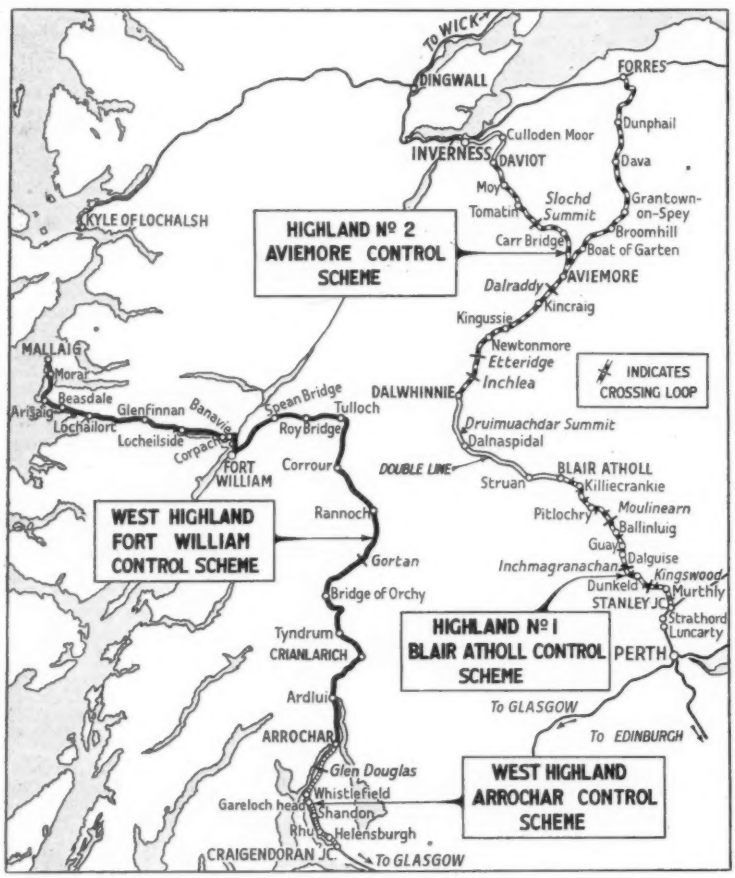
C.T.C. Possibilities in Scotland

The West Highland route of the L.N.E.R. and the Highland main line af the L.M.S.R. are suggested as offering opportunities to apply a method of working adopted with much success in America

From a Correspondent

ONE of the most striking trends in present-day signalling practice in America is the rapidly increasing use of C.T.C. for the control of large areas, extending sometimes to an entire subdivision. While the most spectacular progress has been made in that country, some developments which are perhaps even more significant from the British point of view also are taking place in New Zealand. In America, where C.T.C. has been applied to the operation of long stretches of single-line, the majority of locations previously had no signalling at all, and traffic movements were directed by train orders; C.T.C. was put in for the twofold purpose of speeding up the working and increasing safety. On the other hand, the lines concerned in New Zealand were equipped with the electric tablet system of single-line working. The difficulty of regulating traffic on long stretches of single-line, particularly at times of seasonal pressure when many extra trains have to be run, suggests that the possibilities of applying C.T.C. in this country might be well worth investigating. With this in view the present article has been prepared as indicating what might be done in the way of centralised control on two well-known Scottish lines.

On the L.N.E.R. the West Highland line and the Mallaig extension together form a close parallel to some of the American routes that have been equipped with C.T.C., both in frequency of traffic, and in respect of the difficult country traversed. Over the West Highland proper, covering the 100 miles from Craigendoran Junction to Fort William, in normal times there are two passenger trains, and usually three or four goods trains, in each direction daily; speed is limited to a maximum of 40 m.p.h. throughout, though there are many locations where further restrictions to 30 and 25 m.p.h. are enforced because of severe curvature. In addition to the above traffic there is a local service between Craigendoran and Arrochar consisting of five or six trains in each direction daily. At passing places, tablets are exchanged by hand, involving reduction of speed to about 10 m.p.h. by non-stopping trains. On the Mallaig extension line, traffic is still more sparse, and amounts to one regular goods train and two passenger trains in each direction. These services are augmented during the tourist season in peacetime, when the loads of many passenger trains are further increased by the conveyance of fish from Mallaig.



Map showing possible C.T.C. schemes in Scotland

With C.T.C. it would be possible to control the entire railway, from Craigendoran Junction to Mallaig, from one panel, located at, say, Fort William; but due to the increased traffic on the southern end of the line, and the closer spacing of the stations it would probably be more convenient to instal a second panel at Arrochar to cover the 20 mile section southwards to Craigendoran, in which there are five passing places, and two further passenger stations without crossing facilities. The main control panel at Fort William therefore would cover 80 miles on the West Highland line, and the 42 miles of the Mallaig extension. In all eighteen signal boxes would be eliminated, though in certain cases some levers would need to be retained for operation as ground frames. The operation of a wayside station will be discussed in more detail later. The effect of this arrangement would be that one traffic controller, at Arrochar, would handle the local passenger traffic to Craigendoran, and the through goods and passenger traffic between Fort William and Glasgow which passes through the Arrochar-Craigendoran section. The usual time table is such that very few "meets" are made on this southern section, and the total of ten or eleven trains daily in each direction could be handled easily by one man.

The second controller, at Fort William, would be concerned only with the through traffic, as the Craigendoran-Arrochar locals would not at any time come under his jurisdiction. Although covering a considerable route mileage, the traffic is slow moving, and the passing places are, for the most part, widely separated. On the winter service, in normal times, there would not usually be more than six trains on the illuminated diagram at any one time. A typical example of train movement occurs between the hours of 6 and 9 a.m. At the beginning of this period there are two southbound goods trains on the line between Fort William and Crianlarich, and "meets" have to be arranged between these and a northbound express goods. A second northbound goods is expected to pass Arrochar shortly, and thus come under the control of the man at Fort William. After that comes the first northbound passenger train of the day. The accompanying diagram shows a specimen working of these five trains, on a day when the northbound passenger train is duplicated. During this period there is only one train on the Mallaig extension line, and no "meets" have to be arranged.

The movements of the various trains are indicated on the illuminated panel diagram by the lighting of lamps, and recorded on the moving chart of the automatic graph recorder by electrically-operated pens. The traffic controller completes the graphic record by joining together the marks representing the passage of a train at successive stations. The diagram relating to the 6 a.m. to 9 a.m. period shown herewith is typical of the time charts registered by an automatic recorder, and completed by the traffic controller. The entire direction of traffic movement is carried out by signal

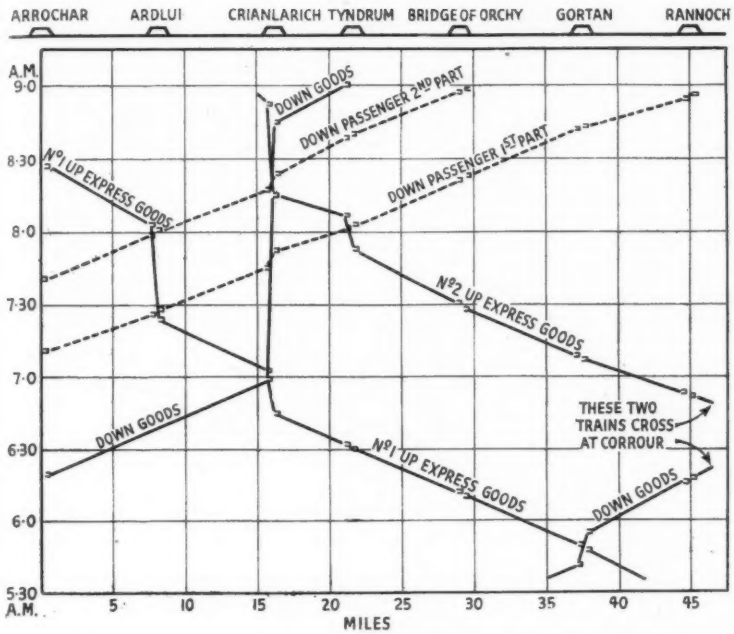


Fig. 1—Specimen graphic record as applied to West Highland line

indication, and it is only on special occasions that the telephone would be used. Codes for the control of points and signal operation would be conveyed entirely upon two lines, and the indications of track circuits and the lie of points would be transmitted back on the same pair of wires. As only one code, either control or indication, can be on the line at a time it is arranged that indications from the more distant localities are held up until a nearer station has completed its transmission; thus in the example shown diagrammatically, if the northbound passenger train passed Arrochar at the same time as the second of the two southbound goods trains passed Gortan, indication of the latter movement would be transmitted first. The complete transmission of a code, however, takes only about 4 seconds, and on a line like the West Highland the time lag in the reception of an indication code would be of no importance.

The Highland section of the L.M.S.R. provides a further example where C.T.C. might be used to great advantage in the regulation of train movement; though here, with heavier traffic and faster running the arrangements would require to be more elaborate. There is first of all a section of single line, 28 miles long, from Stanley, on the Perth-Aberdeen main line to Blair Atholl; in this length there are ten crossing places. The heavily-graded section over Druimuachdar Summit, and down the north descent as far as Dalwhinnie is double-track—a total of 23¼ miles—after which there is a further section of single-line, 24¾ miles long, to Aviemore, the junction of the two main routes to the north. From this point, on both the Inverness direct line, and on the old route *via* Forres there is again very heavy grading; the Forres line is single throughout its length of 36 miles, with five crossing places, and the direct line is single-track as far as Daviot, 23¾ miles, with four crossing places. The "Farther North" route (Inverness to Wick) and the Dingwall and Skye line are similar in traffic working to the West Highland section of the L.N.E.R., and need no separate consideration.

On the main line between Perth and Inverness speeds up to 75 m.p.h. are run in places, and the use of the Manson automatic-tablet exchanging apparatus permits of speeds up to 60 m.p.h. through the crossing loops. In peacetime during the summer and autumn five regular express passenger trains were scheduled to leave Aviemore for the south between the hours of 4.30 and 6 p.m. alone. In the down direction there was a correspondingly busy period from about 5 a.m. onwards; otherwise traffic is moderate. At times of heavy tourist traffic, trains from the south are often late in arriving at Perth, and this lateness is liable to react on the operating over the entire Highland section. Quite apart from immediate repercussions on the Perth-Inverness section, late running of the connecting trains to Wick is liable to delay southbound traffic on the "Farther North" section, with the result that the important group of expresses leaving Inverness in the late afternoon is also affected. It is in coping with a situation in which trains using a single-tracked route cannot make their scheduled "meets" that C.T.C. is of such value. A suggested application to the Highland line, between Perth and Inverness, would involve the equipment of two distinct installations: Stanley Junction to Blair Atholl, and a three-way plant at Aviemore covering the single-track sections to Daviot, to Forres, and to Dalwhinnie. On the stretch of double track between Blair Atholl and Dalwhinnie manual block working would remain.

The southern section of C.T.C. would be operated from a control panel at Blair Atholl, where the traffic controller would be able to co-ordinate the working over the 28 miles of single line, from Stanley, with a knowledge of train movements on the double-tracked section to Dalwhinnie. Blair Atholl itself would remain a

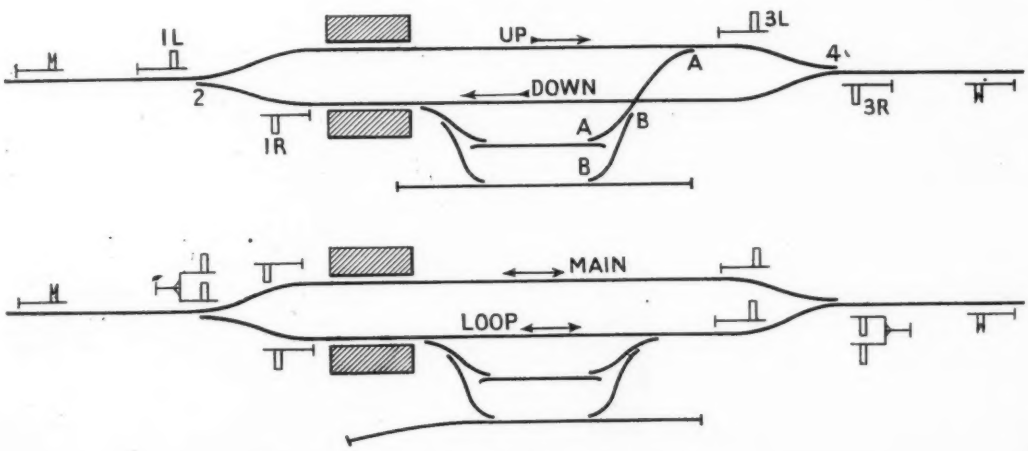


Fig. 2—Layout of typical station and crossing loop

Above: As usual nowadays. Below: Modified to give more flexibility in operation

mechanical interlocking; at this station heavy down trains attach bank engines for the climb over the Grampians, and these movements, combined with those of assistant engines returning light from Dalnaspidal, make Blair Atholl one of the busiest of Highland signal boxes south of Aviemore. At the seven stations between Blair Atholl and Stanley all through running movements would be remotely controlled. The accompanying diagram shows a typical station layout, requiring six thumb-switches on the C.T.C. control panel. One switch would be required for each of the main points 2 and 4; two 3-way switches would control the home and starting signals, and the remaining two switches would be for ground frame control. The distant signals for each direction of running would operate automatically, according to the indications displayed by the respective home and starting signals.

One switch only controls both the home and starting signal at one end of the station; thus No. 1 turned to the left, 1L. controls the up home, and when turned to the right 1R. controls the down starter. Two ground frame releases would be provided; the down-line release would permit shunting in and out of the yard, but not using the crossovers AA and BB, so that through traffic could pass on the up line while shunting was in progress. The up-line release would permit the crossovers AA and BB to be used, and then no main-line traffic could be run. Greatly increased flexibility of operation, however, could be secured if the present up and down through lines in the loop were signalled for either-direction running, as shown in the second diagram, and all the siding connections were taken off one running line. This would actually reduce the number of thumb-switches required on the C.T.C. control panel. Two 3-way switches would then each operate four signals; No. 1 turned to the left would operate the up homes, the particular signal being electrically selected according to the lie of the points. The same switch when turned to the right would operate the down starters. Only one ground frame release switch would be required. This rearrangement of the layout would allow opposing trains to cross, or a fast train to overtake a slower one travelling in the same direction, without the latter having to shunt back. Similar facilities could be provided at the three crossing loops, Moulinearn, Inchmagranachan and Kingswood.

The distance of 28 miles between Blair Atholl and Stanley Junction is covered in about 40 min. by the express passenger trains, and the passing times between adjacent crossing places varies, according to the distance apart, between 3 and 6 minutes. At busy periods control and indication codes would therefore be going out and coming in fairly rapidly, and it would probably be desirable to divide the line into two sections for the purpose of C.T.C. control. By the use of coded carrier control this could be done without having any additional wires. With this arrangement, the 15 miles of line between Blair Atholl and Dalguise would be operated by conventional d.c. coded control. On these two wires would be superimposed the high-frequency coded carrier control for the more distant section from Dalguise to Stanley. At Dalguise the high frequency currents would be received by a field unit, and delivered to the line as ordinary d.c. codes. The advantage of this from the operating point of view is that control codes from both the Blair Atholl-Dalguise and the Dalguise-Stanley sections could be transmitted simultaneously. Conversely indication codes from both sections could be received on the control machine at Blair Atholl simultaneously.

Turning now to the more northerly section of the line, the inclusion of the three converging sections, Dalwhinnie-Aviemore, Daviot-Aviemore, and Forres-Aviemore on one control machine would make for the closest possible co-ordination of traffic movements. Although normally the whole area could be handled by one controller-signalman it would be necessary to design the layout of the panel so that at times of heavy pressure the working could be divided between two men, one handling the Dalwhinnie-Aviemore section and the second dealing with the other two. It would be desirable also to divide the Dalwhinnie section for C.T.C. purposes between Kingussie and Newtonmore and use coded carrier control for the more distant half; here, as between Blair Atholl and Stanley, the crossing places are relatively close together, and the running speeds exceed 70 m.p.h. at times. No such division would be necessary on either the Daviot or the Forres line.

So far the Highland main line has been considered solely from the viewpoint of traffic operation. The two schemes outlined, one centred on Blair Atholl and the other upon Aviemore, would between them eliminate 25 signal boxes, so far as main-line running is concerned. Of these seven, at present controlling crossing loops, would be abolished altogether, and the remainder would be relegated to the status of ground frames and opened only when local shunting was needed. The single-line tablet instruments and the automatic-exchanging apparatus would be dispensed with. A further operational advantage would result in that it would no longer be necessary to confine workings over the Highland section to the limited number of locomotives now equipped with the Manson exchanging apparatus.

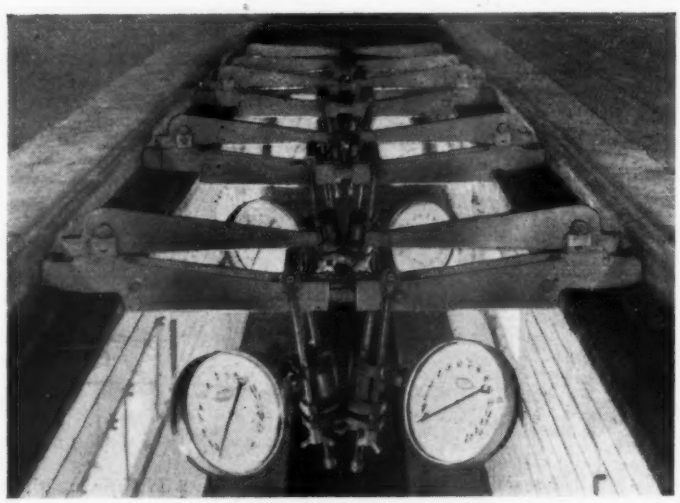
Modified diagrams might be introduced, making still better use of the available motive power. Against these savings must be set the capital cost of the new equipment, including, of course, continuous track circuiting throughout the C.T.C. areas. It would seem that the possibilities of better operation and reduced working expenses from the introduction of C.T.C. might be considerable, and, with the interesting example of the New Zealand railways in view, the prospects in Scotland seem well worth investigating.

Weighing Locomotives in Service

The L.N.E.R. has introduced locomotive weighing pits illuminated with fluorescent lighting

ILLUMINATED weighing pits have been introduced at certain important running sheds on the L.N.E.R., so that locomotives can be weighed with a high degree of accuracy while in service. In the event of a spring breaking or becoming weak, or the re-metalling of an axlebox, it is essential that the weight on individual axles should be checked after the repairs are carried out. This can be done with portable weighing machines of the ordinary yard-arm type, but this method has its disadvantages, especially when the arms project outside the inspection pit; a further disadvantage is that the reading of the dials simultaneously is not possible. The method introduced by the L.N.E.R. overcomes these as can be seen from the illustration. Not only are the yard-arms out of the way, but all the dials can be seen at once as the pits are illuminated with fluorescent lighting. This enables a high degree of accuracy to be obtained and a great reduction in time taken to weigh a locomotive.

The Kelbus type of portable weighing machine has been in use on the L.N.E.R. for many years, but the provision of a brightly-lighted pit lined with white tiles and specially designed for the accommodation and use of these machines is an innovation on this railway. With this arrangement, two men can weigh an eight-wheel locomotive in 30 minutes.



Medical Examinations Coach, G.W.R.

Staff amenities development

A NOVEL development in connection with staff welfare recently has been introduced by the Great Western Railway on the medical side of its organisation. In the interest of the staff, no less than that of the service, it is necessary for men in certain occupations, particularly the operating grades, to be examined by the company's Chief Medical Officer periodically. The regulations provide for the examination of trainmen, in respect of physical condition and eyesight standard, on attaining 60 years of age, and annually thereafter; or, in some cases, as occasion arises. These examinations involve the men concerned being relieved from duty, and travelling to a central point, usually in the vicinity of the divisional offices. The difficulty of providing adequate accommodation of a suitable character, both for the men and the doctor, at such offices, will be readily realised.

The company therefore has had under consideration the practicability of securing adequate and properly equipped accommodation for the staff concerned at the various centres. The solution has been found by means of a special medical examination coach which has been prepared in the Swindon works for the Chief Medical Officer, and is now available for service. This coach moves from point to point, and thus saves travelling time for the staff.

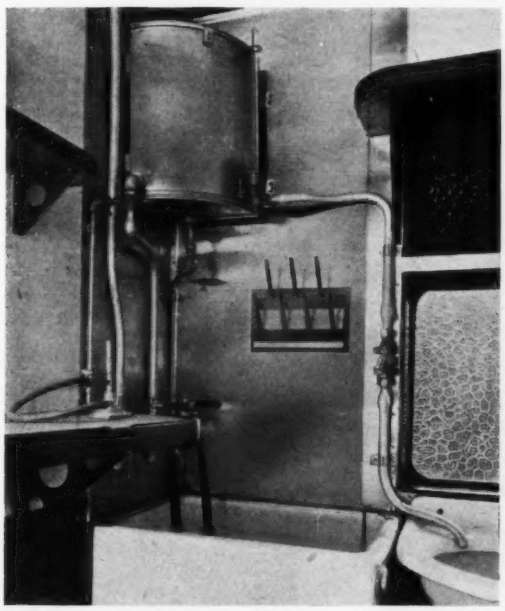
The vehicle is 57 ft. long and consists of a compartment for the medical officer, with adjacent laboratory fully equipped; divisional superintendent and clerk's office; three examination cubicles, a waiting-room and lavatories. A corridor extends the full length of the coach, a portion of which is fitted and used as an eyesight examination room. The three examination cubicles are at one end of the vehicle, each fitted with a couch with adjustable back-rest. Pegs for clothing are also provided, and on the opposite side of the compartment a flap table is fitted.

The waiting-room is 16 ft. long and just over 6 ft. wide. It is fitted with cushioned seats trimmed with green patterned moquette, similar to that used in third class compartments of passenger coaches. The room is well lit by two windows set above the seats along the non-corridor side—one on either side of the central door.

Apart from the eye-sight testing corridor, the walls and ceiling of which are painted black, the vehicle has ceilings and walls down to the waist line finished in white enamel; below the waist the walls are grained in medium oak, matching the furniture which is also of oak. All the floors, except in the lavatories, are covered with light brown linoleum, and a green carpet is provided alongside the couches in the examination cubicles, as well as in the medical officer's compartment.

All electric lights throughout the vehicle have been duplicated so that adequate illumination is provided either from the lighting equipment carried on the coach, or from a higher voltage mains supply where available. Steam and electric radiators are fitted in all compartments.

NATIONAL "SAFE-DRIVING" COMPETITION.—Of the London Transport staff, 3,626 tram and trolleybus drivers and 2,293 country bus drivers have entered the National "Safe Driving" competition for 1945. In the 1944 competition, 2,840 tram and trolleybus drivers gained awards. A driver at Wood Green depot who has not been involved in an accident for 27 years received a bronze badge, the highest award. The 53 drivers who won major awards have not had a driving accident for more than 20 years. No fewer than 20 of these awards were won by Wood Green drivers. The competition results for central area and country bus drivers have not yet been announced.



A corner of the medical officer's laboratory

View (from centre) of the large waiting room

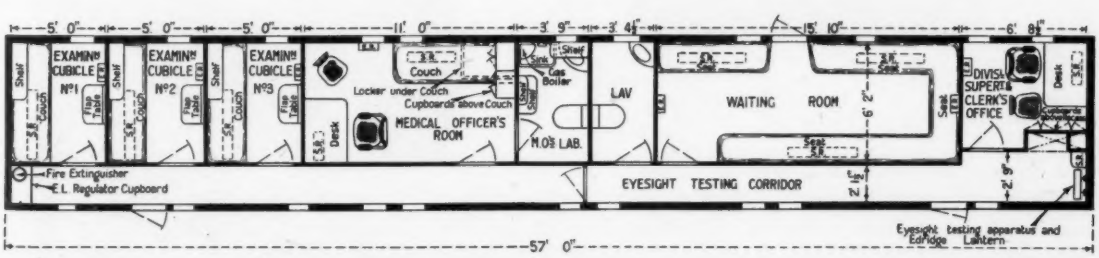
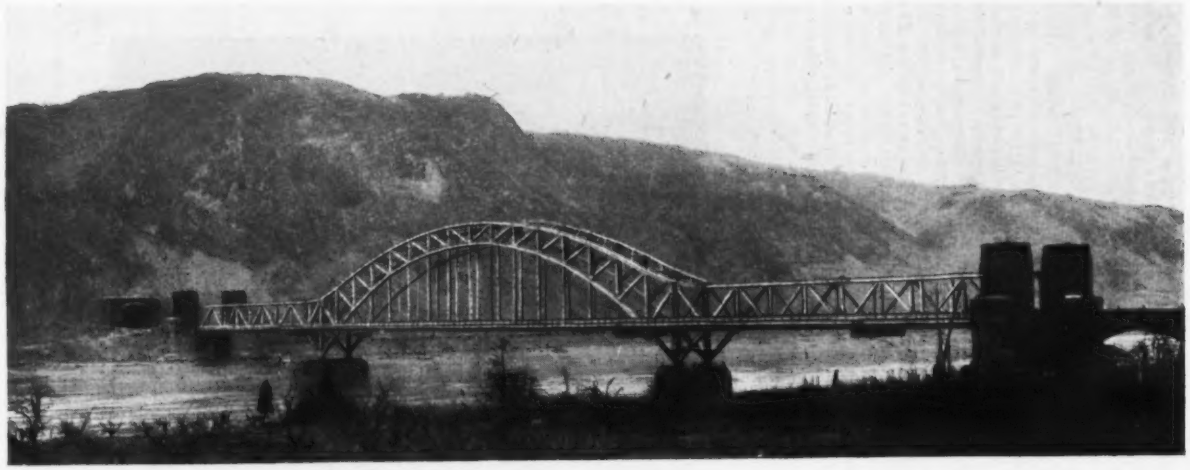


Diagram showing layout of the varied accommodation in the new medical examinations coach, G.W.R.

The Ludendorff Railway Bridge at Remagen



The now world-famous Ludendorff Bridge of the Reichsbahn at Remagen, begun in 1916 *and completed in* 1918. *It was* 1,860 *ft. long, and carried a double-line railway and a footpath. This view was taken from Remagen, on the west bank of the River Rhine, looking towards Erpel on the east bank*

The west portal of the Remagen Bridge, which was captured by troops of the 9th Armoured Division of the First U.S. Army on March 7, enabling the first Allied crossing of the River Rhine to be made

American troops passing over the Remagen Bridge; they quickly adapted it to carry road traffic. After ten days of intensive use as a road bridge, the centre span collapsed on March 17. *(See page 454)*

RAILWAY NEWS SECTION

PERSONAL

SOUTHERN RAILWAY CHIEF ELECTRICAL ENGINEER

The Southern Railway has appointed Mr. C. M. Cock as Chief Electrical Engineer, as from May 1, on which date Mr. A. Raworth retired from the service.

Mr. Raworth will act as Consulting Electrical Engineer to the company for a period of twelve months.

Mr. R. E. Kimberley, Chief Mechanical Engineer, Buenos Ayres & Pacific Railway, is retiring on May 31, and is to be succeeded by Mr. E. J. Beckwith, at present Assistant to Chief Mechanical Engineer.

Mr. Joseph F. Costello, who is Mayor of Galway, has been co-opted a Director of the Irish Transport Company in place of the Rt. Hon. James MacMahon, who has resigned.

We regret to record the death on April 22, in his 82nd year, of Mr. William McConchie, formerly Secretary & Traffic Manager of the Portpatrick & Wigtownshire Joint Committee and the Larne & Stranraer Steamship Joint Committee. After the grouping in 1923, Mr. McConchie had charge of the Portpatrick & Wigtownshire section of the L.M.S.R. until he retired in 1925.

L.N.E.R. APPOINTMENTS

The L.N.E.R. announces the following appointments:—

Mr. A. F. Moss, Acting District Superintendent, Manchester, to be District Superintendent, Nottingham.

Mr. J. Royston, Assistant District Superintendent, Manchester, to be Acting District Superindendent, Manchester.

Mr. H. W. Few, Acting Assistant to Superintendent (Southern Area), to be Trains Assistant to Superintendent (Southern Area).

Mr. C. H. Lott, Head of the Works & General Section, Chief General Manager's Office, to be Acting Trains Assistant to the Superintendent & Locomotive Running Superintendent (North Eastern Area).

Mr. Hugh Shoobridge, formerly Chief Statistician in the office of the Vice-President, Montreal, Canadian Pacific Railway, has been appointed Assistant to Mr. H. J. Humphrey, Vice-President, Special Duties.

Mr. F. R. Mays, Vice-President, Illinois Central System, has retired on account of ill health. Mr. W. A. Johnston, who was appointed General Manager when Mr. Mays proceeded on sick leave last September, continues in charge of operation.

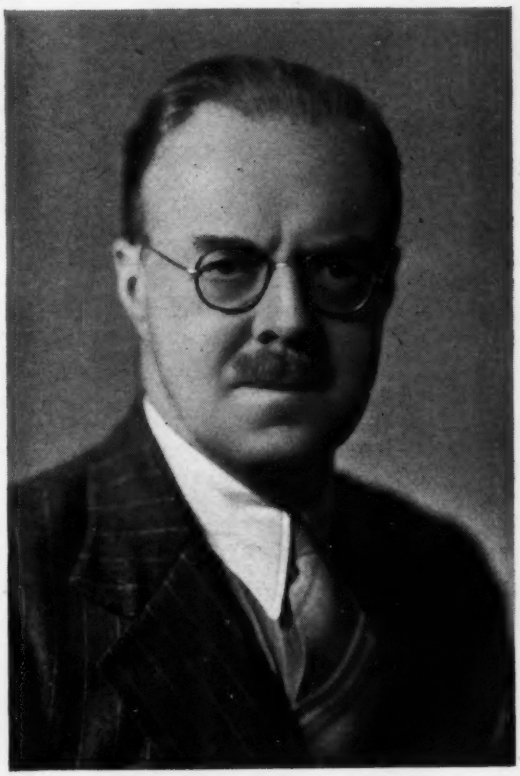
G.W.R. APPOINTMENTS

The Great Western Railway announces the following appointments:—

Mr. L. W. Conibear, Acting Chief Clerk, Superintendent of the Line's Office, Paddington, to be Commercial Assistant to Superintendent of the Line, Paddington.

Mr. J. F. Cole, Head of General Section, Superintendent of the Line's Office, Paddington, to be Chief Clerk, Superintendent of the Line's Office, Paddington.

Mr. S. G. Pick, M.C., E.D., previously General Secretary & Director of Wagon Interchange, Indian Railway Conference Association, who, as recorded in our March 16 issue, has been appointed Chief Traffic Manager, Bombay, Baroda & Central India Railway, served with the Royal Artillery in a number of theatres during the war of 1914-18, and was decorated with the Military Cross, before going to India and joining the B.B.C.I.R. as a traffic probationer in 1919. He subsequently worked in the Traffic Department in many capacities. Three years ago he was selected for the post of General Secretary & Director of Wagon Interchange, Indian Railway Conference Association, which he relinquished last January.



Mr. S. G. Pick

Appointed Chief Traffic Manager, Bombay, Baroda & Central India Railway

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Mr. H. F. Simpson, who, as recorded in our March 16 issue, has been appointed to succeed Mr. S. G. Pick as General Secretary of the Indian Railway Conference Association, was educated at Tonbridge School. In 1919, he joined the former South Eastern & Chatham Railway as a probationer, and gained experience in all branches of the Traffic Department. After a period on the relief staff of the London (East) Division and in the Eastern Divisional Operating Superintendent's Office, then at Dover, he was appointed an Assistant Traffic Superintendent on the Bengal-Nagpur Railway. In 1940, he was appointed to the Government of India, Railway Department (Railway Board), as Deputy-Director in the Traffic Branch, and subsequently as an Officer on Special Duty. He was appointed to his present post last January.

Mr. W. B. Pickering has retired from his offices as Commercial Manager & Director of Hadfields Limited. Mr. H. Humphries, late Director of Steel Castings & Forgings, Ministry of Supply (Iron & Steel Control), has been appointed to succeed Mr. Pickering as Commercial Manager; he also has been made a Local Director of the company.

Mr. A. C. Yeates has been appointed a Director of Crossley-Premier Engines Limited.

Dr. W. D. Speedy, Chief Medical Officer, Bengal-Nagpur Railway, who died while on military duty, left £3,138.

Mr. R. D. Marshall, who has been Assistant Engineer to the Maidstone & District Motor Services Limited for many years, has been appointed Acting Engineer to the company.

Mr. J. H. Mahler has been appointed a Director of Alfred Herbert Limited, in place of Mr. Ralph Jackson, who recently resigned. Mr. D. M. Gimson has resigned from the board of the company.

Mr. D. B. Collett, Fort Dunlop, has been appointed General Works Manager of the Speke factory, near Liverpool, recently leased to the Dunlop Rubber Co. Ltd. by the Board of Trade for peacetime production.

Mr. G. J. Cassie, London Manager of Heatly & Gresham Limited, has retired from that position, which he has occupied since his return from India in 1926. His services are being retained by the board in an advisory capacity. He is succeeded as London Manager by Mr. J. L. Riordan, previously Manager, successively, of the company's Madras and Bombay Branches, who was posted to the London Office in 1939.

We regret to record the death on April 27 at the age of 86, of Mr. William Royse Lysaght, C.B.E., J.P., D.L., for many years one of the leading figures of the steel industry. He was President (and had been Chairman & Managing Director) of John Lysaght Limited, with which he had begun his connection in 1878; and a Director of Guest, Keen & Nettlefolds Limited.

In the course of an appreciation contributed to *The Sunday Times* of April 29, Sir Samuel Beale (Chairman & Managing Director of Guest, Keen & Nettlefolds Limited, and a Director of the London Midland & Scottish Railway Company) writes: "He and his two brothers, S. R. and H. R., with their cousin, B. C. Lysaght, built their firm's Orb Works at Newport, the Normanby Park Works at Scunthorpe for a supply of the steel bars for the sheetworks at Newport, and then were responsible for the courageous and successful venture in Australia whereby the whole requirements of that Dominion in steel sheets had been supplied from the Lysaght Works at Newcastle and Port Kembla."

The west portal of the Remagen Bridge, which was captured by troops of the 9th Armoured Division of the First U.S. Army on March 7, enabling the first Allied crossing of the River Rhine to be made

American troops passing over the Remagen bridge, the to carry road traffic. After ten days of intensive use as a road centre span collapsed on March 17. *(See page 454)*

XUM

Irish Transport Company

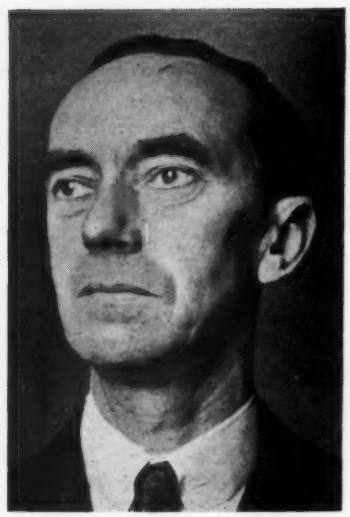
(Córas Iompair Eireann)

Appointment of Chief Officers

Mr. E. C. Bredin
General Manager

Mr. David Stewart
Traffic Manager

Mr. Frank Lemass
Assistant General Manager



Mr. H. G. Boardman
Secretary

Mr. F. H. Hartnell Smith
Chief Accountant

Mr. Edgar C. Bredin, M.I.Mech.E., M.Inst.C.E. (Ireland), formerly General Manager, Great Southern Railways (Eire), who, as recorded in our January 19 issue, has been appointed General Manager, Irish Transport Company, was educated at Mountjoy School, Dublin, and began his engineering training in 1905 at Gloucester. He joined the Great Southern & Western Railway at Inchicore in 1907; for some years he was attached to the Locomotive Engineer's Office, and was engaged particularly in research connected with fuel consumption. Subsequently he was appointed Junior Assistant to the Locomotive Running Superintendent. In 1911 he became Shed Foreman at Rosslare, where he was responsible for the operation and maintenance of the electric cranes and generating plant, also the gas works. Three years afterwards he became Assistant to the Running Superintendent, Northern District, Inchicore, of which he afterwards was District Superintendent. In 1916, he was appointed Assistant Works Manager, and five years later assumed the full duties of Works Manager, at Inchicore. On the formation of the Great Southern Railways in 1925 he carried out the reorganisation of the locomotive works of the constituent systems, and subsequently supervised their co-ordinated working. He was appointed Chief Mechanical Engineer in 1937. On the retirement of Mr. W. H. Morton in 1941, he became Acting General Manager; and in 1942 he was appointed General Manager. Mr. Bredin is the designer of the three-cylinder express locomotives of the "Maeve" class, which have been maintaining the Dublin-Cork service for some years, and are the most powerful engines in service in Eire.

Mr. David Stewart, formerly Acting Traffic Manager, Great Southern Railways (Eire), who, as recorded in our January 19 issue, has been appointed Traffic Manager, Irish Transport Company, is a Chartered Accountant. He has been associated with transport since 1928, when, as Senior Assistant with Messrs. Craig, Gardner & Company, he supervised the audit of the accounts of the Irish Omnibus Co. Ltd. In 1930, at the invitation of the directors of the Irish Omnibus Co. Ltd., which had then come under the direct control of the Great Southern Railways, he took up the post of Chief Accountant to the company; and in 1932 he was appointed to the Secretaryship of John Wallis & Sons Ltd., the cartage subsidiary of the railway company, retaining his position with the Irish Omnibus Co. Ltd. Consequent on the assimilation of the Irish Omnibus Co. Ltd. and John Wallis & Sons Ltd. by the railways in 1934, he was charged with the task of negotiating for the acquisition of passenger and merchandise licences, and appeared in many arbitration proceedings as the railway company's principal witness. Later he became Manager of the Omnibus Department of the Great Southern Railways; and since June, 1942, he has been the officer in charge of the Traffic Department.

Mr. Frank Lemass, A.C.A., formerly Secretary & Accountant, Dublin United Transport Co. Ltd., who, as recorded in

our January 19 issue, has been appointed Assistant General Manager, Irish Transport Company, was educated at Belvedere College, and for a number of years was associated with the Dublin firm of Auditors and Accountants, Messrs. Craig, Gardner & Company. When, some time before the change of title to that of the Dublin United Transport Co. Ltd., Mr. Lemass joined the Dublin United Tramways Co. (1896) Ltd., as Accountant, he carried out a complete reorganisation of the accountancy system. With the change to the new title he became Secretary & Accountant, and he continued to fill that post during the existence of the company.

Mr. H. G. Boardman, formerly Secretary, Great Southern Railways Company, who, as recorded in our January 19 issue, has been appointed Secretary, Irish Transport Company, joined the Waterford & Tramore Railway as Accountant in 1910. Fifteen years later, on the amalgamation, he was transferred to the Secretary's Department of the Great Southern Railways Company at Kingsbridge, Dublin, where his duties were associated mainly with the fusion of the undertakings. In 1928 he was appointed Chief Clerk in the department, and he became Secretary in 1942.

Mr. F. H. Hartnell Smith, A.C.A., formerly Accountant, Great Southern Railways (Eire), who, as recorded in our January 19 issue, has been appointed Chief Accountant, Irish Transport Company, worked with Messrs. Price, Waterhouse & Company for some ten years before he became Assistant Accountant to the Great Southern & Western Railway in 1918. In 1924 he was appointed Chief Accountant, and he was entrusted with the duties of that position on the formation of the Great Southern Railways, and with the task of reorganising the accountancy system to meet the new conditions.

L.M.S.R. Appointments

The L.M.S.R. announces the following appointments :—

Mr. H. A. Chapman, Senior Parliamentary Assistant, to be Assistant Solicitor to the company.

Mr. H. S. James, Solicitor Assistant (Parliamentary), to be Chief Parliamentary Assistant.

Mr. D. S. Inman, District Goods Manager, Leeds, to be District Goods Manager, Liverpool.

Mr. T. R. Heaton, District Goods Manager, Wolverhampton, to be District Goods Manager, Leeds.

Mr. F. Grundy, Assistant to Chief Commercial Manager (Goods), Watford, H.Q., to be District Goods Manager, Wolverhampton.

Mr. A. J. D. Thomas, Dock Superintendent, Heysham, to be Assistant Divisional Superintendent of Operation, Manchester, in place of Mr. W. Davies, retiring.

Mr. G. H. Buckley, District Controller, Stoke, to be District Operating Manager, Stoke.

Mr. G. Lovelady, Assistant, Freight Services Section, Chief Operating Manager's Office, Watford, H.Q., to be District Operating Manager, Leeds.

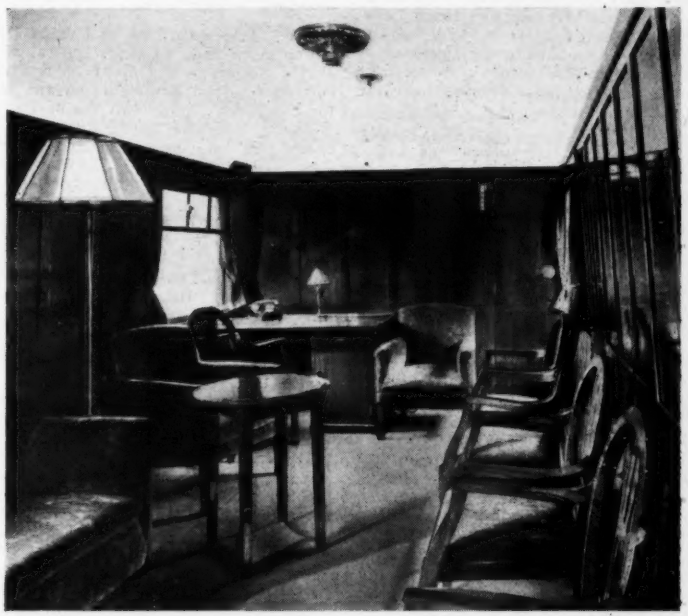
Mr. J. L. O'Connell, District Veterinary & Horse Superintendent, St. Pancras, to be Chief Veterinary Surgeon & London Horse Superintendent, St. Pancras.

Mr. R. I. Spencer, District Locomotive Superintendent, Saltley, to be District Locomotive Superintendent, Nottingham, in place of Mr. A. Dingley, transferred.

TRANSPORT SERVICES AND THE WAR—292

General Eisenhower's Armoured Car

One of the most modern carriages possessed by the L.N.E.R. has been completely armour plated reeently and is now in service on the Continent for use by General Eisenhower, Supreme Commander of the Allied Forces. The vehicle is a first class sleeping car built a few years before the outbreak of war. Originally it contained 10 berths, a shower compartment, a toilet, and an attendant's compartment. Six of the berths have been converted into a conference room and a combined sleeping and dressing compartment, the former provided with desk, table, and chairs, as shown in the accompanying illustration.



Interior of General Eisenhower's conference room in his armour-plated carriage, converted from a first-class L.N.E.R. sleeping car

Roof, sides, and ends are covered with armour plating, and the windows, all of which are fitted with armour-plated shutters and some of which have been enlarged, are equipped with armour-plate glass. A radio aerial is provided on the roof. All roof fittings, such as ventilator covers, are of armour plate. The conversion has increased the weight of the coach from 43¼ tons to 51 tons.

New Railway Timetables

In connection with the new timetables of the British main-line railways which are to be introduced on Monday next, May 7, the Railway Executive Committee has issued the following official statement: —

Train services during the summer months will be substantially the same as at present. Passenger services operated last summer were restricted by the heavy curtailment of passenger trains before "D-Day." These have since been restored. The augmented services introduced at the beginning of the year to the Eastern and Southern counties consequent upon their de-restriction are also to be maintained.

The railways are still working under great pressure, and, although they will do everything in their power to improve their passenger services further, priority must be given to the movement of traffic required for military operations, for the relief of the liberated peoples, and for the maintenance of the life of the nation.

The locomotive position remains serious, and the situation for passenger vehicles is acute. Even should the war in Europe come to an end in the next few weeks, the heavy movement of priority freight traffic over the railways will continue for some considerable time. In these circumstances the public must not expect any substantial increase in passenger facilities this summer.

The staggering of holidays evenly throughout the coming months is more essential than ever, and, coupled with mid-week travel, will not only afford considerable relief to the railways, but will also enable the travelling public to secure a greater measure of comfort.

Closure of Stations

The L.M.S.R. has announced that the following stations will be closed for passenger and parcels traffic on and from Monday, May 7 :—

Newton Road, L.M.S.R. Parcels traffic will be dealt with at Great Barr Station.

Birkenhead Town, L.M.S. & G.W. Joint. Alternative facilities are available for passengers at Birkenhead (Woodside) L.M.S. & G.W. Joint and at Birkenhead (Central) Mersey Railway Stations. Parcels traffic will be dealt with at Birkenhead (Woodside).

Lighting in Transport Vehicles

From Monday, April 23, blackout restrictions were lifted in regard to business premises and private houses throughout England and Wales, with the exception of a five-mile coastal belt. Railway and other transport vehicles were excepted from the relaxation, but on April 25 the Ministry of Home Security announced further relaxation of lighting restrictions allowing pre-war lighting in trains, trams, and buses in the greater part of the country; restrictions are still necessary in the coastal areas to avoid helping enemy submarines. As stated in the House of Commons on April 19 (see page 456), permission had been given previously to remove the painted strips

round the edges of railway carriage windows, and the work is now in hand. Security restrictions on traffic signals are also being removed except in the coastal areas. Until peace-time street lighting is restored, the degree to which signals will be unmasked will be determined in each area by the highway authority and the police jointly.

Tube Station Light Locks

A beginning has been made with the removing of the light locks from 51 London underground railway stations, including Finsbury Park, Elephant & Castle, Aldersgate, High Street Kensington, Mark Lane, Earls Court, South Harrow, and Tooting Broadway. These screens were erected at the entrances to stations to prevent light from the booking halls shining into the street.

Passenger Luggage on the Clyde Coast

The L.M.S.R. and L.N.E.R. have announced that from May 14 to September 15 (inclusive) luggage will not be accepted under the "Passengers' Luggage in Advance" arrangements for conveyance to or from all Clyde Coast piers served by railway steamers, including Millport and Arran; all piers served by MacBrayne's steamers from Wemyss Bay; Gourock, Wemyss Bay, Craigendoran, Helensburgh, and Helensburgh Upper stations; all stations between Kilwinning and Portpatrick and between Kilwinning and Largs. The maximum weight of luggage which may be taken with passengers is 100 lb. for an adult and 50 lb. for a juvenile.

Civilian Air Raid Casualties

The Ministry of Home Security, in a Parliamentary written answer, has given the following figures of civilian casualties due to enemy air action in the United Kingdom from the outbreak of war until April 20, 1945:—

Killed (or missing believed killed)	60,585
Injured and detained in hospital	86,175

The casualties are classified as follow:—

	Men	Women	Under 16	Unclassified
Killed (or missing believed killed)	26,920	25,392	7,736	537
Injured and detained in hospital...	40,736	37,816	7,623	—

The totals are the same as the summation of the figures to February 28 given by the Prime Minister on April 10 (see our April 20 issue, page 397), and the monthly figures for March.

The Remagen Bridge

We have already published brief details of the world-famous Ludendorff Bridge at Remagen, in our April 6 issue, page 349. This week we include (page 450) some illustrations of the bridge, which crosses the River Rhine between Remagen and Erpel, as it was when the U.S.A. First Army captured it, almost intact, on March 7. Just ten days later it collapsed entirely. It was a double-line railway bridge, consisting of a central steel arch, 512 ft. long, flanked by two 278-ft. lattice girder spans, the pier ends of which were carried on short cantilever arms extending over the piers from the arch.

It seems that, though the retreating Germans had failed to blow the bridge as a whole, they had succeeded in firing two demolition charges, which had weakened the lower chord of the arch near its east end, causing it subsequently to give way near the springing. Slight damage by shelling and aerial bombing may have contributed to the weakness. During the ten days between its capture and collapse, the bridge had carried a large volume of traffic, but on March 17 it was not under bombardment and was closed to traffic. Two Engineer units, totalling some 200 men, were at work on it, one unit repairing the superstructure and the other the roadway. Apparently, the arch suddenly began to collapse, and, swinging sideways from one pier, took about 45 sec. to subside completely into the water. Due to its connections with the land spans, it dragged these with it, but the piers do not seem to have been greatly damaged. Nearly all the Engineers were thrown into the river, but some were rescued from the wreckage, and others as they were swept downstream to a pontoon bridge thrown over the Rhine a few days previously. The number who lost their lives was 28.

The Bombing of Berlin

For more than 4½ years the railways of Berlin (shown in the maps we reproduced last week) have formed important targets for the R.A.F., but, with the entry of the Russians into the Berlin area they have ceased to be since the early hours of April 21. Appropriately, the last bombs—four 500 pounders—were dropped by a Mosquito piloted by a Londoner. Berlin has been bombed 282 times by British and U.S.A. aircraft operating from British bases—264 of the attacks by British bombers. Since the first raid on the night of August 25, 1940, Bomber Command has unloaded on Berlin 45,386 tons of high explosives and incendiaries. Fortresses and Liberators dropped another 22,940 tons, making a total of 68,326 tons.

Independent Military Railway Communication System in Europe

Approximately 25,000 circuit miles of telephone, telegraph, and teletype wires, and ten mobile radio units are used by the U.S.A. Second Military Railway Service for railway communications alone. The lines link every station with the headquarters of the Second Military Railway Service, while mobile radio units handle long-distance control messages between ports, headquarters, and front-line railheads. Most of the telephone and telegraph wires used were erected by soldier railwaymen of the Second Military Railway Service, who now maintain and operate this widespread network. The Telephone & Telegraph Section was organised in England before the invasion. After the breakthrough at St. Lo, the section was doubled in size. The Signal Corps, responsible for the rehabilitation and operation of the railway communication system, was swamped attempting to keep up with the requirements of the combat troops and rear echelon headquarters. This situation forced the Second Military Railway Service to operate its own lines of communication. It was arranged for the Signal Corps to release to the Transportation Corps headquarters the ten high-powered mobile radio units now used extensively.

A Canadian Achievement

Some of the problems which had to be solved by the Canadian National Railways "while rendering wartime service on an unprecedented scale" were dealt with in an address delivered by Mr. S. W. Fairweather, Vice-President of Research & Development, before the Commerce Club of Queen's University at Kingston, Ontario, on March 6. Mr. Fairweather spoke of the fallacy of the German estimate of Canada's potential participation in the war as exemplified by a document the German intelligence staff had prepared just before the war, which he had seen. This said that the Atlantic ports were connected with the interior by inferior railway lines which would quickly become congested under wartime traffic.

In point of fact, before the war, a study was made of the capacity of the railway lines in Canada which would be needed to support a greatly expanded industrial activity, particularly those which would serve Canada's strategic ports. Within one day of the outbreak of war the information thus secured was acted upon. The work included the enlargement of terminal facilities, the lengthening of passing sidings, and the increase of repair shops and engine house facilities. The capacity of the lines in the strategic zones was further enlarged by instituting a system of centralised traffic control.

The problem presented by the fact that it was impossible to manufacture equipment in the quantities required was solved by making extraordinary use of existing equipment. Canadian National freight traffic had doubled, and passenger traffic quadrupled, as a result of the war. To have accomplished this result with net increases in locomotive equipment of 1 per cent., freight equipment of 10 per cent., and passenger equipment of 7 per cent., was truly a remarkable performance.

A Cut in U.S.A. Steel Allocations

Serious cuts have been made by the War Production Board of the United States in the allocation of steel to the railways for the second quarter of 1945, and the explanation is that military requirements for steel are heavier than at any other time since the U.S.A. became involved in the war. The Office of Defense Transportation had called for 1,527,000 tons of carbon steel for railway use during the second quarter; this the W.P.B. has cut to 1,065,000 tons, as compared with a first quarter's allotment of 1,254,838 tons.

Of rails, the O.D.T. had requested 600,000 tons, the entire production of the mills equipped for controlled cooling; this is cut to 417,000 tons for the railways and 11,000 tons for the transit lines. Of soleplates, fishplates, fishbolts, and spikes, the request was for 300,000 tons; this is reduced to 209,000 tons for the railways, and 5,000 tons for the transit lines.

It had been hoped to build 13,500 wagons in the second quarter, for which 250,000 tons of carbon steel would have been needed; but this tonnage is cut to 135,000 tons, sufficient for 7,500 wagons only, most of which will be bogie box wagons. The steel allocation for new locomotives will be 30,000 tons only. Based on promised allotments of steel, the O.D.T. has planned for the building during the second quarter of 250 passengers carriages, and for continuing the work begun in the first quarter after a lengthy interval during which no new passenger stock had been turned out; but the W.P.B. has brought this programme to a standstill, and is providing only 252 tons of steel for the completion of 15 baggage and mail cars.

Other agencies of transport, such as tramcar, motorbus and motorcoach systems, lorry operators, and water transport companies, have suffered proportionate reductions in their steel requirements. The increasing intensive use and wear-and-tear of rolling stock makes the restriction on renewal and replacement of existing stock, let alone additions to it, a matter of great seriousness for the railways.

Disruption of Croatian Traffic

According to recent information from Zagreb, Jugoslav Partisans have been successful, in a series of acts of sabotage, in wrecking strategic points on all the railway lines to the west and to the north of Zagreb leading from Croatia towards Germany, thus preventing their use for the retreat of the German armies occupying the north-western regions of Jugoslavia, including the western areas of Bosnia. The double-track Ljubljana-Maribor line is reported to have been damaged seriously.

The Vulcan Foundry Limited

The annual general meeting of the Vulcan Foundry Limited was held on April 24 at Northgate House, Moorgate, London, E.C. 2. Mr. Walter Woodbine Parish, the Chairman of the company, presided.

The Chairman, in the course of his speech, said that the order book as it stood would keep the company fully employed not only throughout the current financial year but for some period into 1946. The directors also expected that the Ministry of Supply shortly would finalise arrangements with the industry which would allow a complete programme for 1946 to be issued.

Looking ahead, the company was ready and anxious to discuss with overseas railways their requirements, both steam and diesel, and hoped that by 1947 operational requirements would have permitted a relaxation of the existing control of the industry's capacity. It might be that control was inevitable and necessary for a period, but until those who wanted locomotives and those who built them could get together, if need be under the eye of control, the working out of a long-term programme for the industry was well-nigh impossible, and the longer the working out of this programme was postponed the greater would be the difficulty in obtaining allocations of raw material, in planning for the various types of locomotives required, and in getting production into smooth and regular running.

The locomotive industry of this country would be called on to play a very important part in the rehabilitation of the world, not only in those countries which had felt the destructive power of war, but in many countries where the reflex of war had made it impossible to maintain normal ordinary purchases of new additional locomotives, quite apart from requirements due to wear and tear which called for replacement—a demand which would be insistent. Common sense in outlook and willingness to assist by close co-operation between manufacturer and railways were essential if the locomotive requirements of the world were to be fulfilled effectively.

Co-operation with British Railways

From a meeting which had taken place recently between representatives of the industry and the General Managers of the four British railways, it was known that the railways would seek capacity from the industry to build over a period of five years a limited number of locomotives which were regarded as arrears which the railways had been unable to build in their own workships during the war years. Opportunity had been taken at this meeting to press the British railways to place a proportion of their future requirements with the industry so as to allow for a regular number of locomotives to be delivered annually, and bear in mind it was regularity in output which was the essence of low productive costs, thus affording a real assistance to the industry in its competition for export work. In view of the Government's urgent call for a large increase in exports it was to be hoped that the future policy of the British railways would be closely allied with the old-established locomotive industry, which had demonstrated fully during the years of the war that its existence in fighting fettle was of national importance.

He was fully convinced that co-operation was an essential of success under post-war conditions; co-operation within the industry as represented by the Locomotive Manufacturers' Association of Great Britain, working for the mutual benefit of both the industry itself and of the purchaser; co-operation with the railways, with a view to ensuring the maximum mutual benefit that could arise therefrom; and co-operation with Government Departments with which it was essential for the Locomotive Manufacturers' Association to maintain the closest possible touch.

His colleague, and the company's managing director, Mr. Whalley, was President of the Locomotive Manufacturers' Association, a body composed of the locomotive manufacturers in this country; Mr. Whalley was also a director of the North British Locomotive Co. Ltd. and Chairman of Robert Stephenson & Hawthorns Limited in which this company, jointly with the North British Locomotive Company, had a considerable interest, so shareholders would realise that the Vulcan Foundry was playing its full part, so far as it might, in the efforts to promote the best interests of the locomotive industry in the post-war world.

Contribution to War Effort

Having had the honour of occupying the post of Chairman of the company since 1934, he spoke with knowledge when he said Vulcan Foundry's contribution to the war effort was one which those in the office, those in the shops, men, women and boys, had the right to be justly proud of.

The company's entry into the field of armaments was not its first experience in this line, as substantial supplies of weapons of various types had been made during the last war, and from 1932-33 orders for gun parts and torpedo components had been executed for the Admiralty. At the end of 1935 a first educational order for light tanks had been received from the War Office, and in subsequent years substantial numbers of this type of tank had been delivered. Perhaps of all the war essentials which the Vulcan Foundry had contributed the most notable had been the Matilda tank.

Based on instructions from the War Office, the preliminary investigations into the design of this entirely new type of tank had been entrusted to the Vulcan Foundry in October, 1936. The first models were completed and ready for trial in March, 1938, and full-scale production was ordered shortly after. The first deliveries of production models were made in September, 1939. The numbers of this type of tank which were delivered by a group of firms of which the company was the " parent " ran into thousands.

Alongside tank manufacture, machine-gun mountings of several different types had been produced in large quantities, and extensive work for the Admiralty also carried on. The production of torpedo parts had been steadily built up to a substantial output of each of the major compenents in 1944. In September, 1942, when the demands of transport had become so urgent that the provision of additional railway haulage could no longer be postponed, instructions were received to switch over from tanks to locomotives. So great a change had presented many problems, but these had been overcome, and several hundreds of locomotives had been produced.

The company had played a part in the preparations for the invasion of the Continent, and since January, 1943, had been entrusted with responsible work in connection with the waterproofing of a variety of armoured fighting vehicles to enable them to wade ashore from landing craft.

Perhaps I may here add, having paid tribute to the work done by those in the offices and shops, that the picture of the successful war output of the company was incomplete without making reference to the works manager, Mr. Lane, the general manager, Mr. Saunders, and finally the managing director, Mr. Whalley. It had not been a question only of dealing with current problems, it had been a question—during the past five years—of looking ahead, planning ahead, and looking and planning ahead again and again. To each of these three members of the executive organisation he could not pay too high a tribute.

He had year by year paid tribute to the work of those men, women, and boys who had contributed to the war effort of the Vulcan Foundry; it had been a truly magnificent achievement, especially in the past record year when a high output had been reached notwithstanding many hampering and unforeseen restrictions; for it had to be remembered that the insistent calls for the fighting services had taken away many of those fit young men on whom the industry normally relied in peacetime.

With the ending of the war contribution effort, the company would pass to the no less vital peace contribution effort, and knowing what the Vulcan Foundry was capable of accomplishing, he looked forward with confidence to the output of the years immediately ahead.

The report and accounts were adopted.

Craven Bros. (Manchester) Ltd.

The annual general meeting of Craven Bros. (Manchester) Ltd. was held on April 25 at Reddish, Stockport. Mr. J. R. Greenwood, Chairman & Managing Director, presided.

The Chairman, in the course of his statement circulated with the report and accounts, said that the Government's recently issued White Paper on the industrial war effort of the country made no mention of machine tools, without which the production of any engineering product would be impossible—a rather unfortunate omission having regard to the importance which the Government had attached to the industry throughout the war, as was evidenced by the fact that a very large department had been created to control and direct the efforts of the industry and to operate a system of rigid price control, which in the ultimate issue was nothing more or less than fixing arbitrarily a ratio of profit earned on the capital used in a particular business. This principle in his opinion, was contrary to the intention of the Finance Act in so far as the latter provided that firms paying E.P.T. would be entitled to a post-war credit of 20 per cent., or say 10 per cent. after tax deduction. Further, it reduced the efficient firm, with a high earning capacity, to the level of an inefficient firm which might own an equal value of tangible assets, on which the calculation was based, but whose earning capacity was low.

The industry had been concerned in the past because it had felt that it had had to be content with the knowledge that " virtue was its own reward." Now it was concerned as to the future because it had recently been informed by the Government that there was, in the Government, a clear recognition of the

necessity for an adequate and healthy British machine tool industry in the interest of industrial efficiency as well as for national defence. It was feared that the belated realisation by the Government of the importance of the machine tool industry and the extent to which the country had depended on the industry during the war might make some people anxious to maintain some measure of control, which would not be in the best interests of the industry of the country.

The industry wished to see the end of all forms of bureaucratic Government control and interference as soon as it was practicable. Freedom for individual effort and a reasonable reward for initiative and courage in business were the only sure guarantees that industry would continue to be efficient, and expand, with consistent improvement in design, technical development, and more research. These conditions were essential to regaining export markets which would be so vital to individual and national prosperity.

During the war the company had been fortunate in that it had been almost completely engaged in its normal type of peacetime production—machine tools. It had designed and built a large number of special machines of the heaviest type for armament work in the production of shells, guns, tanks, armour plate, aircraft engines, marine engines, etc. It had produced a considerable amount of special equipment required by the various Supply Departments and it had produced a large quantity of jigs and fixtures for many aircraft companies.

A number of its largest machine tools had been despatched to the United States of America for use in the large shipbuilding programme carried out there. Very satisfactory reports regarding the performance of these machines had been received.

Some time ago they had held the view that, having regard to the enormous quantity of standard machine tools which had been produced in this country and the large quantity which had been imported from the U.S.A., the machine tool industry might find it difficult after the war to obtain a sufficient volume of business to continue normal working capacity, and, although the company manufactured so few standard machine tools, it was thought the demand for its own product might be curtailed. Fears in this respect had proved completely unjustified.

The greatest difficulty the company was facing was shortage of man-power and it could take into its service upwards of 600 additional workpeople as soon as they became available, and could offer full employment for some years.

The company had received indications of an unprecedented demand for its products from overseas, practically all over the world, so that some expansion of the business was indicated, and it was a matter for regret that high taxation and excess profits tax have deprived industry of the opportunity of building up some reserves which could have been used for re-equipment, replacement of obsolescence and for normal expansion.

Recently the company had entered into a long-term manufacturing agreement with Walmsleys (Bury) Limited, manufacturers of pulp and paper-making machinery. Under this agreement, the company would substantially assist Walmsleys in the manufacture of Walmsleys products.

Questions in Parliament

Blackout on Carriage Windows

Sir Ralph Glyn (Abingdon—C.) on April 19 asked the Secretary of State for the Home Department why the painted blackout area on the windows of railway coaches could not yet be removed, because the shortage of labour would prevent all coaching stock being dealt with for many months.

Mr. Herbert Morrison (Home Secretary) in a written answer stated: Permission to remove the painted strips on railway carriage windows recently has been given and I understand that a start has been made.

Traffic Lights

Sir Ralph Glyn (Abingdon—C.) on April 19 asked the Secretary of State for the Home Department whether he would give the necessary instructions for masks to be removed from traffic-light road signals so that the colours could more readily be seen, especially in strong sunlight.

Mr. Herbert Morrison stated in a written answer: There are no restrictions on the amount of light which may be shown from traffic signals in daytime.

Travel for Women's Services in India

Miss Irene Ward (Wallsend—C.) on April 19 asked the Secretary of State for India if he would give an assurance that in future every white woman, regardless of rank, travelling in India, in the services or in connection with welfare work for the services, would have first class travel in accordance with the acknowledged custom of the country; and what departures from custom had taken place and why.

Mr. L. S. Amery (Secretary of State for India) in a written answer stated: The present rule for the women's services is that other ranks travel second class. Welfare workers, who are regarded as performing duties comparable with those of officers, travel first class. Accommodation marked "Ladies Only" normally is reserved for women travelling unaccompanied by men.

Fares for Wounded Soldiers' Relatives

Sir Irving Albery (Gravesend—C.) on April 24 asked the Secretary of State for War if he was aware that many relations visiting wounded soldiers were unaware of the reduction in train fares to which they were entitled; and what steps he was taking to make this concession better known.

Sir James Grigg: The concession fares granted by the railway companies to certain relatives visiting soldiers in hospital have been available for nearly five years and should be well known. In this connection I would refer Sir Irving Albery to the reply I gave Mr. D. L. Lipson (Cheltenham—C.) on March 29. I am considering whether any further steps are necessary to make the concession better known.

Sir I. Albery: Is it necessary to get some documents from the hospital, and would it be possible for near relatives to travel to the hospital and then get the documents?

Sir J. Grigg: That seems to me to be a different question. The question originally asked related to publicity for an existing concession, and, as I understand it, what Sir Irving Albery proposes is to change conditions under which the concession is granted. I think he had better put that question down.

Mr. Glenvil Hall (Colne Valley—Lab.): Does the concession also extend to relatives who want to visit returned prisoners-of-war in hospital or rehabilitation centres?

Sir J. Grigg: I cannot say off-hand and I shall be grateful if Mr. Hall will put that question down.

Mr. A. Denville (Newcastle-upon-Tyne Central—C.): Will the Minister consider granting free travel for relatives to visit wounded and sick?

Sir J. Grigg: I think the position is that, in the case of soldiers who are dangerously ill, free travel is granted; this question deals only with cases of people who are not dangerously ill.

Railway Rolling Stock in India

Mr. A. Sloan (South Ayrshire—Lab.) on April 19 asked the Secretary of State for India, what proportion of the new locomotives and the 5,400 railway wagons which were being replaced on the Indian railways would be built fully or in part in India; and what was the approximate period covered by this replacement programme.

Mr. L. M. S. Amery stated in a written answer: I understand Mr. Sloan to refer to India's post-war requirements. Those of wagons will be 5,400 a year for 10 years, all of which it is expected will be made in India. Those of locomotives have not yet definitely been estimated; it is expected that a substantial part of them will be made in India.

International Transport Organisation

Mr. James Griffiths (Llanelly—Lab.) on April 25 asked the Secretary of State for Foreign Affairs whether the British Government was taking steps to set up at the earliest possible moment an authoritative international transport organisation in Europe; whether the conference which had been considering the establishment of a European central inland-transport organisation for five months was approaching a decision; and whether steps were being taken to expedite its work.

Mr. R. K. Law (Minister of State): In reply to the first and second parts of the question, His Majesty's Government has made it clear to all other interested Governments its desire to see such an organisation established and its willingness to participate therein, but the decision does not of course rest with it alone. The answer to the last part of the question is in the affirmative.

Civil Air Transport

Mr. W. R. D. Perkins (Stroud—C.) on March 23 asked the Parliamentary Secretary, Ministry of Aircraft Production, as representing the Minister of Civil Aviation, when he proposed to introduce a Bill dealing with air transport.

Mr. A. T. Lennox-Boyd (Parliamentary Secretary, Ministry of Aircraft Production) stated in a written answer: The Government is as anxious as any Member can be to introduce the necessary legislation on air transport at the earliest moment. The first step must be to introduce a Bill to vest the ministerial control of civil aviation in the Minister for Civil Aviation. This Bill is in an advanced state of preparation. A second Bill will then be introduced to give effect to the Government policy for the operation of air-transport activities. This also will be introduced with the least possible delay.

Fishguard-Rosslare Service

Sir Patrick Hannon (Birmingham, Moseley—C.) on April 25 asked the Parliamentary Secretary, Ministry of War Transport, when he contemplated the restoration of

the Fishguard-Rosslare cross-channel service; and how soon regular sailings might take place.

Mr. Noel-Baker: I regret that I am unable to say when it will be possible to restore the service from Fishguard to Rosslare.

Sir P. Hannon: Will the Parliamentary Secretary take into consideration the importance of re-opening this service as soon as possible in the public interest?

Mr. Noel-Baker: We are very anxious to re-open it, but it really depends on the availability of a suitable ship, and that depends on the progress of the war.

G.W.R. Medical Fund Society

Sir Wavell Wakefield (Swindon—C.) on April 26 asked the Minister of Health if he would give an assurance that the special work carried out by the Great Western Railway Medical Fund Society would be furthered and extended in his proposals for the new health service.

Mr. H. U. Willink (Minister of Health): The special organisation and experience of this society will certainly not be overlooked, but I can give no specific assurances at this stage.

Sir W. Wakefield: Is the Minister aware that there is very real anxiety in Swindon lest the unique work of this society will be restricted in future? Will he not give an assurance that its work will not be frustrated under any of his new proposals?

Mr. Willink: I thoroughly appreciate the good work which the society has done, and in many directions I feel that that good work can be carried further.

Trains and Blackout Relaxation

Sir William Edge (Bosworth—Lib. Nat.) on April 26 asked the Secretary of State for the Home Department how the raising of the blackout would affect the windows of trains running partly inland and partly into the five mile black-out belt round the coast.

Mr. Herbert Morrison (Home Secretary) in a written answer stated: Restrictions on train lighting are being removed generally, but no increase in existing standards of lighting can be allowed yet within the coastal belt. The railway companies are examining the problem that arises in the case of trains which run partly within and partly outside the coastal belt.

Size of Motor Passenger Vehicles

Mr. Harry Thorneycroft (Manchester, Clayton—Lab.) on April 25 asked the Parliamentary Secretary, Ministry of War Transport, whether he was now in a position to give a decision on the representations made to him in January this year by the road-passenger authorities with reference to the length and width of motor passenger-vehicles; and could he now make a statement.

Mr. Noel-Baker: On January 30, I received a deputation of representatives of the manufacturers and operators of road passenger-vehicles, who laid before me their objections to the present regulations which govern the length and width of buses and lorries. In accordance with a promise I then gave, I received the deputation again on April 23. I explained that on the information before him, the Minister of War Transport was unable to depart from his previous decision that road conditions in this country do not permit the general use of wider or longer vehicles. I promised that, if new facts were submitted, they would be considered.

Mr. Thorneycroft: Is the Minister aware that the road-transport passenger-carrying authorities are unanimously in favour of the suggested change; and is it possible to set up an independent inquiry to discover the suitability of the various suggestions?

Mr. Noel-Baker: On the first point, I have had representations from bus operators that they would not be able to use 8-ft. buses and therefore the two standards would have to remain. On the second point about an independent inquiry, I must remind Mr. Thorneycroft that this is the responsibility of the Minister of War Transport, who must make the decision.

Sir Oliver Simmonds (Birmingham, Duddeston—C.): Will the Parliamentary Secretary bear in mind the wise words of the Chancellor of the Exchequer yesterday, that in many of these matters in future we must not consider our own convenience, so much as the importance of the export trade?

Mr. Noel-Baker: Yes, Sir, but also we must bear in mind congestion on our roads and the question of safety.

Haifa-Beirut-Tripoli Railway

Major-General Sir Edward Spears (Carlisle—C.) on April 24 asked the Secretary of State for War whether compensation had now been paid to the expropriated owners of the land on which the Haifa-Beirut-Tripoli railway was built in 1942.

Sir James Grigg (Secretary of State for War): I regret that it has not yet been possible to pay this compensation. The land was expropriated by a local French decree. A very large number of land owners is concerned and the necessary legal machinery for settling compensation requires further local legislation.

Sir E. Spears: Does not the Minister think it is very bad for British prestige that the army should be in possession of land taken three years ago and not paid for yet?

Sir J. Grigg: My position, and the position of the military authorities, is that they are ready and anxious to pay, but the machinery for payment is not available, and it is machinery that cannot be improvised by the military authorities alone.

Staff and Labour Matters

Engineering Wages

The National Arbitration Tribunal has decided that the basic rates of wages for men, both timeworkers and pieceworkers, in the engineering industry shall be increased by 4s. 6d. a week. The case was heard by the Tribunal on Monday, April 23, 1945, on the claim of the engineering trade unions for a substantial advance in base rates for all men in the engineering industry.

The claim was presented to the Tribunal on behalf of the unions by Mr. Jack Tanner, President of the Amalgamated Engineering Union, and Sir Mark Hodgon, General Secretary of the Boilermakers & Iron & Steel Shipbuilders Society, and Sir Alexander Ramsay replied on behalf of the Engineering & Allied Employers' National Federation.

BENGAL & NORTH WESTERN RAILWAY CO. LTD.—All outstanding Bengal & North Western Railway Co. Ltd. 5 per cent. special debenture stock on November 1, 1945, will be redeemed at par on that date. Repayment, with accrued interest, will be made at the Bank of England.

"IMPROVEMENTS IN CENTRAL BUFFING AND DRAW GEAR FOR RAILWAY VEHICLES." Notice is given, in *The London Gazette* of April 27, in the matter of Letters Patent granted to Reginald Laurence Whitmore and George Spencer, Moulton & Co. Ltd., bearing date May 14, 1929, and numbered 335,168 for the invention of "Improvements in Central Buffing and Draw Gear for Railway Vehicles," that on June 5, 1945, an originating summons on behalf of George Spencer, Moulton & Co. Ltd. and Reginald Laurence Whitmore asking that the term of the said Letters Patent may be extended for a further four-and-a-half years, will come before Mr. Justice Uthwatt for directions as to the hearing. Any person desirous of being heard in opposition must, at least eleven days before that date, lodge notice of opposition.

R.E.C. Presentation to Mr. G. Cole Deacon

Mr. V. M. Barrington-Ward, Chairman of the R.E.C. Operating Committee, presenting a silver cigarette box, the gift of all members of the Railway Executive Committee staff, to Mr. G. Cole Deacon, lately Secretary to the R.E.C., who has resumed his duties as Secretary to the Railway Companies' Association

Left to right are Mr. L. P. Ball, formerly Operating Assistant to Mr. Barrington-Ward; Mr. Barrington-Ward; Mr. E. G. Marsden, the new Secretary to the R.E.C.; Mr. H. B. Taylor, Operating Assistant to Mr. Barrington-Ward; and Mr. Cole Deacon.

Notes and News

Associated Automatic Machine Corporation Limited.—The net profit of the Associated Automatic Machine Corporation Limited for the year ended March 31, 1944, was £11,729 (£11,681). The dividend for the year was at the rate of 6 per cent. (same).

Shanghai-Nanking Railway.—The Hongkong & Shanghai Banking Corporation gives notice that bonds for £116,000 of the Chinese Imperial Railway 5 per cent. gold loan in respect of the Shanghai-Nanking Railway were drawn on April 3, 1945, and will become due for redemption at par on June 1, 1945.

Argentine North Eastern Railway Co. Ltd.—The directors of the Argentine North Eastern Railway Co. Ltd. have decided to pay on May 15, 1945, the interest for the six months ended December 31, 1934, on the 5 per cent. "B" debenture stock and debentures, together with 5 per cent. per annum interest thereon, amounting in total to £3 15s. 11d. per £100, less income tax.

South Durham Steel & Iron Co. Ltd.—The gross profit of the South Durham Steel & Iron Co. Ltd. for the year ended September 30, 1944, was £409,854 (£482,080). The amount brought forward was £124,182 (£123,586). The final dividend on the ordinary capital was at 2½ per cent., making 8½ per cent. for the year (same). Distribution of B ordinary shares was at 2½ per cent. (same).

Aluminium Exhibition.—We are informed by the Aluminium Development Association that an exhibition will be held at Selfridges Limited, Oxford Street, London, from May 30 to June 30 with subsequent transfer to the provinces. During the war there has been a seven-fold expansion of the aluminium industry and the forthcoming exhibition will have special reference to post-war reconstruction. The exhibition will illustrate aluminium development and the extended use of the metal and its alloys for peacetime applications.

Hadfields Limited.—Speaking at the ordinary general meeting of Hadfields Limited, held recently at Sheffield, Sir Peter B. Brown, M.Inst.C.E., J.P., the Chairman & Managing Director, said that practically all our overseas investments and export trade had had to be sacrificed during the war. To recover these, all the ability of our business experts, merchants, agents, bankers, manufacturers, scientists and artisans, would be required in a united effort equal in enthusiasm to the supreme effort made by them in the war years.

Bengal & North Western Railway Co. Ltd.—At a meeting of members of the Bengal & North Western Railway Co. Ltd. (in voluntary liquidation) held on April 19 at Winchester House, E.C., a resolution was unanimously passed accepting the offer of the Secretary of State for India for a final settlement of all disputed claims. This settlement provides for a deduction from the amounts due to the company of £471,000 in respect of special contribution to the provident fund, etc., and depreciation, and payment to the company of £21,000 (subject to tax) in compensation for loss of earnings on rolling stock transferred overseas. Remuneration of liquidators for 1945 at £3,000 was also agreed to. A first distribution of £310 per cent. on capital in respect of the purchase price was made on March 1, 1943, and a second distribution of £52 took place on May 1, 1944. The balance of the purchase price still payable, namely, £992,225, as estimated by the company, together with interest and the net earnings for the final period and other adjustments, less Indian taxation and the settlement now arranged, gives a sum estimated to enable a third distribution of about £19 per £100 stock to be made at an early date.

Pressed Steel Co. Ltd.—The net profit of the Pressed Steel Co. Ltd. for the year ended December 31, 1944, was £195,000 (£180,000). The final ordinary dividend was at the rate of 17½ per cent., making 27½ per cent. (same) for the year.

Rhondda Transport Co. Ltd.—The accounts of the Rhondda Transport Co. Ltd. for the year ended December 31, 1944, show a balance for distribution, after provision for taxation, of £30,121 (£24,568). The final dividend is at 3 per cent., tax free, making 5½ per cent. (same) for the year.

Switchgear & Cowans Limited.—Speaking at the ordinary general meeting of Switchgear & Cowans Limited, Mr. Hugh Burroughes, the Chairman, said that during the war a large number of aerodromes, aircraft, H.M. ships and war factories had been equipped with the company's products—some being its normal products, namely, switchgear. New types of mining gear had been developed and were in service in many collieries.

Midland Railway Co. of Western Australia Ltd.—The directors have decided to recommend a dividend of 4 per cent. on the unified ordinary stock in respect of the year to June 30, 1944, less income tax at 9s. 7d. in the £. £2,471 will be placed to Reversionary Certificates Redemption Account. The ordinary general meeting will be held at Winchester House, Old Broad Street, E.C.2, on Thursday, May 17, 1945, at 12 noon.

A. Reyrolle & Co. Ltd.—The net profit of A. Reyrolle & Co. Ltd. for the year ended December 31, 1944, was £114,771 (£117,532). The amount placed to reserve was £40,000 (same) with £25,000 (same) as provision for development expenditure. The final ordinary dividend was at 7½ per cent. (same) making 12½ per cent. (same) for the year. The amount carried forward was £119,411 (£132,097). In the Chairman's statement issued with the accounts it is disclosed that the company has acquired an interest in the London firm of Morphy-Richards Limited for a purchase price of £11,606, satisfied by an issue of the company's ordinary shares.

Canadian Railway President Appeals for Red Cross.—Appealing to all officers and employees of the Canadian National Railways to support the Red Cross campaign for $10,000,000, Mr. R. C. Vaughan, Chairman & President, said recently: 'Side by side with the barbarism of war goes human heroism and compassion. Mercy shows itself in countless individual acts, but as the destruction of war is organised, as rehabilitation must be planned and organised, so must the works of mercy be planned and organised. The task is most effectively accomplished through such agencies as the Red Cross Society."

Vickers Limited.—Speaking at the annual general meeting of Vickers Limited, held recently in London, Mr. A. A. Jamieson, the Chairman, referred to the fact that the company's stock was held by no fewer than 55,000 individual members of the public. At the outbreak of war the Vickers group employed just over 95,000 persons. During the war they reached a peak of 170,000 in 1943, and at the end of 1944 the number was 145,500. Nearly 20,000 former employees had joined H.M. Forces. Vickers equipment, skill and knowledge, besides being suitable for armament work, would be utilised in the future, as in the past, for many commercial purposes in shipbuilding, aviation, engineering, alloy steel, and carriage and wagon building.

Devon General Omnibus & Touring Co. Ltd.—A dividend of 10 per cent. (same) and bonus 5 per cent. (same) has been declared for the year ended Decem-

British and Irish Railway Stocks and Shares

Stocks	Highest 1944	Lowest 1944	Prices May 1, 1945	Rise/Fall
G.W.R.				
Cons. Ord.	62¾	55	56¾	– ¼
5% Con. Pref. ...	122¼	114¾	122½	– 1
5% Red. Pref. (1950)	110¼	104	105	—
5% Rt. Charge ...	135¼	128	136½	—
5% Cons. Guar. ...	134-7/16	125	134½	—
4% Deb.	118⅜	112¾	117	—
4½% Deb.	118-13/16	114	118½	—
4½% Deb.	124¼	119¼	122½	—
5% Deb.	137	129½	136½	—
2½% Deb.	77	73⅛	76½	—
L.M.S.R.				
Ord.	34⅜	27⅞	28	—
4% Pref. (1923) ...	64¼	55¾	58½	—
4% Pref.	81	72¼	78½	—
5% Red. Pref. (1955)	105⅞	102	105½	—
4% Guar.	107¼	99⅛	103½	—
4% Deb.	111½	104	109½	—
5% Red. Deb. (1952)	111	108	108½	—
L.N.E.R.				
5% Pref. Ord. ...	10¼	7-7/16	6⅞	– ¼
Def. Ord.	5-1/16	3¾	3⅞	+ ⅛
4% First Pref. ...	68⅜	55¼	57	—
4% Second Pref. ...	35⅜	28½	29	– ¼
5% Red. Pref. (1955)	102¼	97½	102	—
4% First Guar. ...	105½	96⅜	102½	—
4% Second Guar. ...	95½	88½	96	—
3% Deb.	88⅛	80⅜	87½	—
4% Deb.	110¼	103¼	109	+ ¼
5% Red. Deb (1947)	105⅜	101¼	101½	—
4½% Sinking Fund Red. Deb.	107	104¼	105½	—
SOUTHERN				
Pref. Ord.	80¼	71⅞	75½	– ¼
Def. Ord.	26⅜	23	23½	+ ¼
5% Pref.	122	113¼	122½	– 1
5% Red. Pref. (1964)	117¼	112¼	115½	—
5% Guar. Pref. ...	134	125½	134½	—
5% Red. Guar. Pref. (1957)	115¾	112½	115½	—
4% Deb.	118	110	116	—
5% Deb.	135½	127	135	—
4% Red. Deb. (1962-67)	111¼	107½	110½	—
4% Red. Deb. (1970-80)	112	108¾	112½	—
FORTH BRIDGE				
4% Deb.	107	103	105	—
4% Guar.	106½	102	105	—
L.P.T.B.				
4½% "A"	125	119	123½	—
5% "A"	133½	128	133½	—
3% Guar. (1967-72)...	99¼	98	99	—
5% "B"	124¼	118-7/16	124½	—
"C"	72¾	64½	65½	—
MERSEY				
Ord.	35⅜	33	36½	—
3% Perp. Pref. ...	72	66	71	+ 1
4% Perp. Deb. ...	105	103	106	—
3% Perp. Deb. ...	85½	79½	84	—
IRELAND*				
BELFAST & C.D.				
Ord.	9	6	6½	—
G. NORTHERN				
Ord.	33⅞	19	27	+ ¼
Pref.	49	37	43½	—
Guar....	70	57-7/16	70	—
Deb.	90½	81¼	91½	—
IRISH TRANSPORT				
Common	—	—	72½	—
3% Deb.	—	—	99½	+ ⅛

* Latest available quotation

OFFICIAL NOTICES

IT is desired to secure the full commercial development in the United Kingdom of BRITISH PATENT No. 535222, which relates to "Shock Absorbing Devices," either by way of the grant of licences or otherwise on terms acceptable to the Patentee.—Interested parties desiring copies of the patent specifications and further particulars, should apply to STEVENS, LANGNER, PARRY & ROLLINSON, 5 to 9, Quality Court, London, W.C.2.

OFFICIAL ADVERTISEMENTS intended for insertion on this page should be sent in as early in the week as possible. The latest time for receiving official advertisements for this page for the current week's issue is 9.30 a.m. on the preceding Monday. All advertisements should be addressed to:—*The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.

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ber 31, 1944, by the Devon General Omnibus & Touring Co. Ltd., a subsidiary of the National Electric Construction Co. Ltd., the G.W.R., and the Southern Railway, jointly.

Birmingham Railway Carriage & Wagon Co. Ltd.—The trading profit of the Birmingham Railway Carriage & Wagon Co. Ltd. for the year ended December 31, 1944, after taxation, was £85,016 (£78,894). The amount brought in was £93,244 (£99,694). The amount put to war contingencies reserve was £40,000 (same) and the ordinary dividend was at the rate of 7½ per cent. (same). The amount carried forward was £92,916.

John Baker & Bessemer Limited.—The surplus shown by the accounts of John Baker & Bessemer Limited for the year ended December 31, 1944, was £25,500 (same), after provision for taxation, depreciation and other charges. The amount brought in was £26,880 (£23,414). War damage insurance amounted to £1,383 (£1,814). The ordinary dividend was at the rate of 10 per cent. (same). The amount carried forward was £30,779.

Lancashire United Transport & Power Co. Ltd.—The net profit of the Lancashire United Transport & Power Co. Ltd. for 1944 was £175,461 (£163,801). Investment income amounted to £30,697 (£36,361). Taxation absorbed £115,854 (£126,355) and debt redemption £3,501 (£3,334). The amount put to general reserve was nil (£1,669). The final dividend was at 6 per cent. (same), making 10 per cent. (same) for the year. The amount carried forward was £13,158 (nil).

Antofagasta (Chili) & Bolivia Railway Co. Ltd.—It is announced by the Antofagasta (Chili) & Bolivia Railway Co. Ltd. that goods and passenger tariffs of the Bolivian section of the system were increased by varying percentages as from March 1 and those for the Chilian section by 15 per cent. as from April 26. The adjustments have been made necessary to compensate for recent increases in currency salaries and wages, and for other matters adversely affecting net revenue.

North Devon & Cornwall Junction Light Railway Company.—The North Devon & Cornwall Junction Light Railway is operated and maintained by the Southern Railway on a remuneration basis of 75 per cent. of the gross receipts, with guaranteed interest at 5 per cent. on the debenture stock up to a maximum of £6,500 per annum. The net revenue for the year ended December 31, 1944, was £6,614 (same). The amount carried forward, after adjustment of debenture interest and income tax, was £1,086 (£1,030).

Pullman Incorporated.—Carrier revenues of Pullman Incorporated and its subsidiaries for the year 1944 amounted to $165,692,599 ($151,847,939), and the net carrier earning was $8,822,263 ($4,320,467). Manufacturing sales and miscellaneous revenues amounted to $185,347,804 ($262,922,883) and the net manufacturing profit was $3,637,686 ($3,580,343). Net income was $12,890,006 ($8,176,006) and the amount distributed in dividends was $9,691,635, compared with $9,833,763, leaving a surplus of $3,198,371, against $1,657,757. The purchase price for the M. W. Kellogg Company is given in the report as $18,250,000, of which $16,425,000 has been paid.

Lancashire Dynamo & Crypto Limited.—The net profit of the Lancashire Dynamo & Crypto Limited for the year ended December 31, 1944, after provision for taxation and depreciation was £131,313 (£124,255). The amount brought in was £190,180 (£169,603). The final dividend on the ordinary capital was at 10 per cent. making 15 per cent. for the year, together with a bonus of 7½ per cent. (all same). The amount carried forward was £127,707, with £100,000 put to special reserve for post-war contingencies.

Birmingham & Midland Motor Omnibus Co. Ltd.—The net receipts of the Birmingham & Midland Motor Omnibus Co. Ltd. (controlled jointly by the L.M.S.R., G.W.R., and the British Electric Traction Co. Ltd.) for the year 1944 amounted to £1,704,373 (£1,617,794). Net interest and dividends received totalled £78,000 (£66,541). The net profit after provision for working expenses and taxation was £322,674 (£334,347). The amount carried forward was £202,729 (£174,055). The ordinary dividend was at the rate of 10 per cent. (same) for the year with a bonus of 5 per cent., less tax (same) on the ordinary shares.

Bengal-Nagpur Railway Co. Ltd.—An extraordinary general meeting of the above-named company (in voluntary liquidation) will be held at 132, Gresham House, Old Broad Street, London, E.C.2, on May 8 at 12 noon, for the purpose of considering and, if thought fit, passing the following resolution pursuant to the provisions of Section 233 of the Companies Act, 1929: "That, consequent on the death on March 18, 1945, of Sir George Cochrane Godfrey, one of the liquidators of the company appointed by special resolution duly passed on October 2, 1944, Sir Ernest Albert Seymour Bell, C.I.E., of 6, Fairacres, Roehampton Lane, S.W.15, be and he is hereby appointed liquidator at a remuneration of £750 to act with Sir Louis Kershaw, K.C.S.I., C.I.E., the surviving liquidator appointed by the said special resolution."

Barsi Light Railway Latur Extension.—The Government of H.E.H. the Nizam of Hyderabad has, in exercise of the option granted by the contract of April 21, 1909, with the Barsi Light Railway Co. Ltd. for the construction and working of the 35¾ miles of the Latur Extension within Hyderabad territory, given notice of its intention to purchase that extension with effect from March 31, 1946. The purchase will include all buildings, works, engines, carriages, rolling stock, plant, machinery, capital stores and all other assets used for or appropriated to the working of the extension. So soon as the purchase money or a sufficient part thereof for the redemption of the "Latour Extension" 4 per cent. debentures has been received the company will redeem such of these debentures as then remain outstanding. The amount of these debentures at present outstanding is £88,100.

Imperial Chemical Industries Limited.—The net income of Imperial Chemical Industries Limited, for the year ended December 31, 1944, after provision for taxation, and depreciation £2,500,000 (same) amounted to £6,972,988 (£6,685,345). The final ordinary dividend was at 5 per cent., making 8 per cent. (same) for the year. The amount carried forward was £1,145,274 (£1,062,018).

British South Africa Company.—Speaking at the ordinary general meeting of the British South Africa Company, Sir Dougal O. Malcolm, K.C.M.G., the President, said that Rhodesia Railways Limited, which had continued to render splendid service in the prosecution of the war effort, paid its normal dividend of £125,000 for its year ended September 30, 1943, to the Rhodesia Railways Trust Limited, which in its turn paid a dividend of 12 per cent., less income tax, for its year ended March 31, 1944. The President said he would like to say, once more, how grateful they all were for the unfailing loyalty and good work of their staffs both in Rhodesia and in this country and to the staffs of the railways and other companies associated with them.

Contracts and Tenders

Below is a list of orders placed recently by the Egyptian State Railways:—

Laurence Scott & Electro-Motors Limited: Copper brushes.
Imperial Chemical Industries Limited: Paints.
Colthurst & Harding Limited: Paints.
R. Brown & Company: Paints.
Stewarts and Lloyds Limited: Bends.
James Walker & Co. Ltd.: Gaskets.
Allen West & Co. Ltd.: Coils.
Consolidated Pneumatic Tool Co. Ltd.: Pneumatic tools and spares.
Metropolitan-Vickers Electrical Co. Ltd.: Copper joint rings, etc.
Elliott Addressing Machine: Addressing machines.
Brown-Bayley's Steel Works Limited: Springs.
J. Stone & Co. Ltd.: Dynamo belting.
R. Brown & Co. Ltd.: Points.
J. B. Stone & Co. Ltd.: Beltfasteners.
W. T. Henley's Telegraph Works Co. Ltd.: Cables.
Callender's Cable & Construction Co. Ltd.: Cable.
English Electric Co. Ltd.: Wireless materials (motor).

Forthcoming Meetings

May 7 (*Mon.*).—The Society of Engineers, in the apartments of the Geological Society, Burlington House, Piccadilly, W.1. 5 p.m. "Plastics in Engineering," by Dr. V. E. Yarsley, D.Sc., M.Sc., F.R.I.C.

June 6 (*Wed.*).—The Royal Society of Arts, John Adam Street, Adelphi, London, W.C.2., 1.45 p.m. "Design in Modern Transport," by Mr. Christian Barman, F.R.I.B.A., N.R.D. Mr. T. E. Thomas, General Manager, London Passenger Transport Board, will preside.

Railway Stock Market

Peace prospects maintained confidence in stock markets, which have been generally firm, although British Funds were slightly easier after recent gains. European bonds attracted a little speculative buying, and in other directions, French railway sterling bonds moved higher again, Argentine and other South American rail stocks were inactive, although inclined to become firmer after last week's easier trend. Industrials have been prominent, with some substantial gains in shares of companies expected to benefit from the abolition of double taxation. Sentiment was also aided by City hopes of a supplementary Budget later in the year, which, it is assumed, would take first steps to reduce the burden of war taxation so that industry can be better equipped financially to deal with the switchover to peacetime production.

Home rails remained generally dull after an earlier improvement, but there was little selling; the loss of earlier gains was attributed to cautious markets and the small demand. Whereas double taxation relief and the prospect of E.P.T. concessions have stimulated further interest in industrial shares, there have been no developments drawing attention to home rail stocks, which continued to be dominated by uncertainty as to the Government's post-war transport plans.

It is felt in many quarters that the time is fast approaching when the general principles of the latter should be clearly indicated. Meantime, home rail junior stocks probably will continue to be valued around the current high yield basis. Until the Government's intentions as to transport are made known, it will naturally be very difficult to assess the home railway outlook. Nevertheless, it is believed the railways are not unmindful that, in justice to themselves and their stockholders, the right of the railways to fair and equitable treatment as to problems which have been brought to a head by war conditions should not be lost sight of by the authorities. Indeed, there is no reason to assume (as would appear to be indicated by the valuation of home railway stocks on their present high yield basis) that the railways and their stockholders will be treated unfairly. Moreover, it is reasonable to assume that, granted fair treatment, and substantial industrial activity after the war, it should be possible for the railways to show earnings which would at least permit dividends at around current rates when the control agreement ends. The latter, generally expected to run for at least another two years, will enable dividends on home rail junior stocks to be maintained during the transition from war to peacetime working. It can hardly be contended that this protection of the fixed rental is discounted in current prices, and as time proceeds the junior stocks may not be without scope for capital appreciation. Moreover, yields on stocks such as L.M.S.R. 1923 preference, Southern preferred, and L.N.E.R. first preference must be considered as attractive. Prior charges and senior preference stocks have been inclined to ease after their good rise of the past two months, the easier tendency reflecting that in British Funds, which have lost part of their recent strength.

Great Western 56½, compared with 57¼ a week ago, was lower, the 5 per cent. preference easing fractionally to 123, but the guaranteed stock 134½, and the 4 per cent. debentures 117½, were maintained. L.M.S.R. eased from 28⅛ to 28, the 1923 preference was 58, compared with 58¼, but the senior preference strengthened from 78¾ to 79. L.N.E.R. second preference at 29 was unchanged as compared with a week ago, and the first preference at 57 was also maintained. Southern deferred came in for better demand, improving on balance from 23⅛ to 23⅜; but the preferred moved back from 76¼ to 75¾, and the 5 per cent. preference at 123 was fractionally lower. London Transport "C" improved from 65¾ to 66.

Argentine rails became firmer after Argentina's admission to the San Francisco talks, but prices were slightly lower on balance with Buenos Ayres Great Southern at 11, compared with 11½ a week ago, although the 5 per cent. preference 27¾ was higher, and the 4 per cent. debentures were maintained at 64½. Buenos Ayres Western ordinary 10¼, and Central Argentine ordinary 8 were slightly lower. Elsewhere, San Paulo ordinary was maintained at 54½. Canadian Pacific attracted buyers, rising from 15¾ to 16⅜, reflecting double taxation relief and the better tendency in dollar stocks.

Traffic Table and Stock Prices of Overseas and Foreign Railways

	Railways	Miles open	Week ended	Traffic for week: Total this year	Traffic for week: Inc. or dec. compared with 1942/3	No. of Weeks	Aggregate traffics to date: Totals 1943/4	Aggregate traffics to date: Totals 1942/3	Aggregate traffics to date: Increase or decrease	Shares or Stock	Prices: Highest 1944	Prices: Lowest 1944	Prices: May 1, 1945	Prices: Yield % (See Note)
				£	£		£	£	£					
South & Central America	Antofagasta (Chili) & Bolivia	834	22.4.45	28,960	+ 1,730	15	484,120	450,720	+ 33,400	Ord. Stk.	13½	9½	11	Nil
	Argentine North Eastern ...	753	21.4.45	17,486	+ 1,146	42	834,120	683,260	+ 150,860	,,	6¾	4½	8½	Nil
	Bolivar	174	Mar., 1945	5,430	— 576	12	16,068	15,953	+ 115	6 p.c. Deb.	18¾	7¼	7½	Nil
	Brazil	—	—	—	—	—	—	—	—	Bonds	19 5/16	15	22½	Nil
	Buenos Ayres & Pacific ...	2,773	21.4.45	162,667	+ 19,000	42	6,129,600	5,053,400	+ 1,07 ,200	Ord. Stk.	7 1/16	3¾	5¾	Nil
	Buenos Ayres Great Southern	5,080	21.4.45	237 867	+ 48,133	42	9,447,067	8,526,400	+ 920,667	Ord. Stk.	14⅞	9¾	11¼	Nil
	Buenos Ayres Western ...	1,924	21.4.45	78 000	+ 9,533	42	3,182,133	2,670,733	+ 511,400	,,	13¾	9½	10½	Nil
	Central Argentine	3,700	21.4.45	183,200	— 11,450	42	8,118,813	7,179,913	+ 938,900	—	10¼	6¾	8¼	Nil
	Do.	—	—	—	—	—	—	—	—	Dfd.	4¾	3	4¼	Nil
	Cent. Uruguay of M. Video	972	21.4.45	36,740	+ 3.986	42	1,434 380	1,442 887	— 8.507	Ord. Stk.	5½	4	5¼	Nil
	Costa Rica	262	Mar., 1945	30 802	+ 6,701	38	203 304	199 765	+ 3.539	Stk.	17½	14½	16	Nil
	Dorada	70	Mar., 1945	24,100	— 1,489	12	82,705	73,281	+ 9,424	1 Mt. Deb.	101	101	98½	£6 1/10
	Entre Rios	808	21.4.45	26.420	+ 6,720	42	1,111 7 6	931.893	+ 179,813	Ord. Stk.	6½	4½	5½	Nil
	Great Western of Brazil ...	1,030	21.4.45	24.500	+ 3 500	16	431 500	375.000	+ 56.500	Ord. Sh.	38/-	23/3	28/9	Nil
	International of Cl. Amer. ...	794	Mar., 1945	$192,246	— $82.950	12	$577.793	$757,635	— $179,842	—	—	—	—	—
	Interoceanic of Mexico ...	—	—	—	—	—	—	—	—	1st Pref.	1¾	½	1	Nil
	La Guaira & Caracas... ...	22¾	Mar., 1945	5,393	— 2,311	12	15,910	21,956	— 6,046	5 p.c. Deb.	88	79	78½	£6 7 5
	Leopoldina	1,918	21.4.45	44,751	— 373	16	724,101	723 949	+ 152	Ord. Stk.	5⅞	4¼	4	Nil
	Mexican	483	21.4.45	ps. 543 830	+ ps. 145.830	16	ps. 9,497.900	ps. 6,628 500	+ ps. 2,869,400	Ord. Stk.	¼	⅛	1⅛	Nil
	Midland Uruguay	319	Mar., 1945	16,993	— 1,573	38	155.974	155,768	+ 206	—	—	—	—	—
	Nitrate	382	15.4.45	8 188	+ 116	15	44.413	61.552	— 17.139	Ord. Sh.	75/10	65/10	73/9	£3 7/10
	Paraguay Central	274	20.4.45	$63.138	+ $4.158	42	$2.512.242	$2.173.199	+ $339,043	Pr. Li. Stk.	79½	68	77½	£7 14/9
	Peruvian Corporation ...	1,059	Mar., 1945	138.377	+ 21.175	39	1,170.479	964.686	+ 205,793	Pref.	9	10	9⅛	Nil
	Salvador	100	Feb., 1945	206,000	+ 18,000	34	c 957,000	c 984,000	— c 27,000	—	—	—	—	—
	San Paulo	153½	—	—	—	—	—	—	—	Ord. Stk.	57¾	46	54½	£3 13 5
	Taltal	156	Mar., 1945	3,325	— 1,420	38	23 370	50.015	— 26.645	Ord. Sh.	21/3	13/9	12/6	Nil
	United of Havana	1,301	21.4.45	68,358	— 16,678	42	2,298 078	2,411.219	— 113.141	Ord. Stk.	4	2½	2½	Nil
	Uruguay Northern	73	Mar., 1945	1,856	+ 106	38	14.313	13,265	+ 1,048	—	—	—	—	—
In Canada	Canadian Pacific	17,028	21.4.45	1,198,000	— 1,200	16	18.263,800	18,564,600	— 300,800	Ord. Stk.	17¾	13 11/16	16½	£6 10 9
	Barsi Light	202	Feb., 1945	20.220	— 4.467	44	243,080	237,600	+ 5,480	Ord. Stk.	129½	97½	128½	£3 10 1
Various	Egyptian Delta	607	31.3.45	20,034	— 960	51	705.057	624.658	+ 80,399	Prf. Sh.	7 13/16	5½	6½	Nil
	Manila	—	—	—	—	—	—	—	—	B. Deb.	63½	58	61½	Nil
	Midland of W. Australia ...	277	Feb., 1945	15.394	— 6,199	35	155.340	245.502	— 90,162	Inc. Deb.	101½	99½	96½	£4 2 11
	Nigeria	1,900	27.1.45	395.318	— 30,784	13	—	—	—	—	—	—	—	—
	South Africa	13,301	10.3.45	1,011.148	+ 86 643	50	45,924.430	41,496.425	+ 4,428,005	—	—	—	—	—
	Victoria	4,774	Nov., 1944	1,307.642	— 35,856	—	—	—	—	—	—	—	—	—

Note. Yields are based on the approximate current price and are within a fraction of ⅛. Argentine traffics are given in sterling calculated @ 15 pesos to the £

† Receipts are calculated @ 1s. 6d. to the rupee